Kenya Climate Smart Agriculture Sub-project

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT SUMMARY PROJECT REPORT

FOR THE PROPOSED CONSTRUCTION OF KESI WATER PAN SUB-PROJECT AT KESI VILLAGE, HAKOKA SUB-LOCATION, CHIFIRI LOCATION, WAYU WARD IN GALOLE SUB-COUNTY, TANA RIVER COUNTY

GPS COORDINATES
Longitudes 39 28'32'' E
Latitude 01 16'45'5

SPONSOR-WORLD BANK

PREPARED FOR KCSAP TANA RIVER COUNTY

PROPONENT:

KESI PROJECT COMMITTEE
WATER PAN SUB-PROJECT
P.O. BOX
HOLA
JUNE 2021

CERTIFICATION
CLIENT

I Peter Munyoki on behalf of Kenya Climate Smart Agricultural Project Tana River County, submit this Environmental Social Impact Assessment Summary project report for the Proposed Kesi Community Water Pan in Chifiri location, Tana River County. To my knowledge, all information contained in this report is accurate and a true representation of all findings as relating to the proposed development. I hereby certify that we will comply with all necessary legal provisions and implement the Environmental & Social Management Plan herein.

Signature  *Date:1/3/2022*

Designation: *Coordinator.*

EIA EXPERT

I certify that the details/particulars given in this report are correct and true to the best of my knowledge. The SPR has been carried out according to the Environmental Management and Coordination Act, 2015 and Environmental (Impact Assessment and Audit) Regulations, 2019.

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PROPONENT

Kesi project committee Water pan sub-project

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Signature: …… Date: 1/3/2022

ACKNOWLEDGEMENT

This SPR has been successful through financing by, World Bank through Kenya Climate Smart Agriculture Project (KCSAP), Tana River County. We wish to acknowledge the contribution of

the technical team from KCSAP Tana River County, the department of Water and Irrigation for providing the sub project plans, designs and bills of quantities and for giving technical specifications. We also acknowledge various stakeholders consulted in making it possible for the ESIA study to be carried out successfully and for this report to be completed and we wish to thank all the administration of Kesi Village, Hakoka sub location, Chifiri location and Wayu ward in general. To this end we wish to appreciate the Chief Chifiri location Mr. Idris Guyo Shongolo and Hakoka sub-location assistant chief Mr. Yakub Mohamed and Kesi Community members including the community sub project committee for the support they gave us during this undertaking.

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ABBREVIATIONS & ACRONYMS

CAACs	Catchment Area Advisory Committees
ASAL	Arid and Semi-Arid Land
CBOs	Community Based Organizations
CBD	Convention on Biological Diversity
CDF	Constituency Development Fund
CESSCO	County Environment Social Safeguard Coordination Officer
CHEWs	Indicate in full
COVID 19	Corona Virus Disease
COP	Conference of Parties
CPs	Contracting Parties
CPCU	County Project Coordinating Unit
CPP	Consultation, Public Involvement and Participation
DOSH	Director of Occupational Safety & Health
EIA/EA	Environmental and Social Impact Assessment /Environmental Audit
EMCA	Environmental Management and Coordination Act
ESMP	Environmental and Social Management Plan
ESM&MP	Environmental Social Management & Monitoring Plan
GBV	Gender Based Violence
GHGs	Green House Gases
GoK	Government of Kenya
GRM	Grievance Redress Mechanism
HIV/AIDs	Human Immunovirus/Acquired Immunodeficiency Syndrome
IP	Indigenous People
KeNHA	Kenya National Highway Authority
KCSAP	Kenya Climate Smart Agriculture Project
MoF	Ministry of Finance
MoH	Ministry of Health
MoU	Memorandum of Understanding

MW&I	Ministry of Water Irrigation
NEMA	National Environment Management Authority
NGOs	Non-Governmental Organizations
NWCPC	National Water Conservation and Pipeline Corporation
SEA	Sexual Exploitation and Abuse
SAIC	Social Accountability and Integrity Committee
SOP	Standard Operating procedure
SPR	Summary Project Report
ToR	Terms of Reference
VMG	Vulnerable and Marginalized Groups

WAB	Water Appeal Board
WDD	Water Development Department
MOALF	Ministry of Agriculture Livestock and Fisheries
WHO	World Health Organization
WRMA	Water Resource Management Authority
WSB	Water Services Board
WSP	Water Services Provider
WSREB	Water Services Regulatory Board
WSRS	Water Sector Reform Secretariat
WSS	Water Supply & Sanitation
WSTF	Water Services Trust Fund

EXECUTIVE SUMMARY

Introduction

The proposed Kesi Water Pan sub-project is a community-initiated water sub-project meant to improve the livelihood of the people living in Hakoka sub location, Chifiri location, Wayu ward, in Galole Sub County, Tana River County.

The **capacity of the proposed water pan design is 50,000M^3 on a land area of 30 acres.** The sub-project specific site is in Kesi demonstration farm under communal land ***(see annex 11)*** set aside for purpose of fodder and fodder seed production and a **50,000M^3** water pan construction, a seed storage stores and a strategic feed reserve. The GPS location of the sub project is **N 01° 17.088' and 039°39.575'E and an elevation f 142m** above sea level. The sub project is to be implemented through the Kenya Climate Smart Agriculture Project (KCSAP) through the World Bank (WB) financing. KCSAP focuses on increasing agricultural productivity, enhancing resilience to effects of climate change and reducing GHG emissions.

The Kesi community gets its water supply for livestock from Hakoka water pan that is unreliable during dry seasons. Consequently, community members are forced to walk up to 7 km to the Chifiri water pan in the next sub location in search of water during drought. This project will address the challenges experienced.

Project cost

The activities for the proposed sub-project will entail; clearing of vegetation, excavation of water pan reservoir and construction of embankment, construction of draw off system, cattle troughs and watering point for people, sanitary facilities installation of a solar pump and elevated water tank to support irrigation and fencing. The excavation will be done by a hydraulic excavator. The other works will require; plumbing, masonry, solar installation and installation of the fodder irrigation system. The project cost is estimated at **Kshs. 38,885,000. Including the cost of implementing of the ESM&MP.**

This Environmental and Social Impact Assessment (EIA) has been undertaken in compliance with the Kenya Government environmental regulation, EMCA Cap 387 section 138 (b) and 58 and the World Bank Environment and Social Safeguards Policy.

This SPR has considered all the relevant legal, policy and institutional framework, key among them; the World Bank Environment and Social Safeguards Policies, the existing environmental regulatory framework EMCA Cap 387 and the Environmental (Impact Assessment and Audit) Regulations of June 2003, Occupational Health and Safety Act (2007), the Forest Conservation and Management Act No. 34 of 2016, the Water Act (2016), wastes disposal regulation of 2006, environmental standards, and sustainable use of natural resources principles. Other relevant legislations to this ESIA that were considered include the public health, physical planning, land planning Acts and gender promotion, HIV/AIDS prevention and control Act, and sexual offences

Act, among others.

The process involved screening, scoping and the actual SPR process. It involved the use of several methods including desk top study, literature review, site visits, public participation and discussion with experts. Data collection tools were individual questionnaires, key informant questionnaires, checklists, and observations. A total of 8 key informant interviews were conducted (5 government officers 3 from the beneficiary community). A total of 50 questionnaires were distributed out of which 40 were filled and returned. One consultation meeting was conducted between the proponent and EIA experts. Public participation was conducted on 23/06/2021 at Hakoka primary school and was attended by 45 participants, comprising 30 males and 15 females. Field pictures were taken to record all field proceedings. All necessary data collection and recording tools have been annexed in the report (filled in questionnaires, field pictures, attendance lists and minutes of meetings held).

Preparation of the SPR including the relevant consultations have been undertaken in strict compliance with guidelines for infection prevention and control in the country. Additionally, specific mitigation measures have been introduced to prevent the spread of the pandemic during the construction period. Moreover, consultations required as part of the mitigation measures, such as during training on Environment and Social issues, also pose a risk of infection to communities.

Main issues / Concerns and how the issues will be addressed during the Public Participation and stakeholders

The issues raised during Community and other stakeholders' consultative meetings are as highlighted in table below.

Issue	**Aspect/Concern Raised By Stakeholders**	**Suggested Mitigation Measure**
Security	Possibilities of human and wildlife conflicts.	Fencing of the water pan
Employment of local people	Job opportunities for the skilled and unskilled during and the construction of the water pan	Provide opportunities to the available local skills especially the youth, women and widows
Drowning	Risk of children, animals and drunkards or people with psychiatric issues drowning in the pan	Fencing of the water pan and provision of security Sensitization of the community
Water pan siltation	Degradation of the catchment and inflow channels	Sensitization of community members on management of the water pan catchment Re-vegetation of the catchment
Water pollution	It was raised because of livestock drinking water directly from the water pan and lack of sanitary facilities at the water pan	Consider fencing of the water pan and having only one entry with a gate. Provide Sanitary facilities as per the designs

Increased disease incidences both human and livestock	There was concern over increased disease incidence due to lack of treatment of the pan water and also due to livestock converging at the drinking points due to mixing of animals.	It was agreed the MOH to provide community with drugs to treat water for domestic use and Sensitization of the community on livestock disease control monitoring and prevention intensify disease and pest surveillance
Water demand	Concern was raised whether the water in the pan would be enough for fodder production, livestock and domestic use	The pan will be constructed in-line with the engineer's requirement
Noise pollution	A concern was raised on noise pollution during excavation	It was agreed that the site is away from settlements and also construction period was short and therefore the community could bear with it
Risk of accidents	It was noted that children and adults as well would be exited to visit the site during construction and therefore prone to accidents	It was agreed the water sub-committee would sensitize the community on the matter to avoid the risks
Air pollution due to dust	A concern was raised on air pollution during construction/ excavation	Sensitization of community to avoid visiting/ overcrowding the site during the construction phase
Increased incidences of malaria infection	There was a concern on increase in malaria incidences due to increased mosquito larvae in the pan	MOH to provide the residents with mosquito nets and repellants Introduce fingerlings to feed on the larvae.

Project Impacts and mitigation measures

Positive environmental and social impacts of the proposed sub project will include casual employment during construction and operation phases, availability of water for the fodder seed farm, livestock use and increased livestock productivity, diversification of livelihood with potential in small scale irrigation, encourage the growth of Chifiri Centre, improved sanitation in the area, reduced distance and time to the water source and reliable source of water.

Anticipated negative environmental and social impacts are vandalism of project infrastructure, soil erosion in all phases, solid waste generation, population increase around the water source, accidents during mobilization of resource to and from the site, vector breeding sites and increased waterborne diseases, occupational health and safety hazards, siltation of the pan, noise and dust pollution during construction, risk of pan wall breaking, outbreak of livestock diseases due to many animals converging at the water pan, spread of HIV/AIDS and STIs Incidences, COVID-19 infection among project workers and community members during construction and consultations, water management conflicts, population change impacts, leadership issues (wrangles), Gender based violence (GBV) / Sexual exploitation and abuse (SEA) and intra community conflicts due to competition between livestock and crop farming.

To avoid or minimize the negative impacts and enhance positive ones emanating from the implementation and operation activities of the proposed water pan project, mitigation measures have been proposed in the ESMP to be implemented and an annual environmental audit carried out once the project is in operation. The proposed mitigation measures include, among others, growing of grass on the embankment and within the farm, tree growing, provision of waste bins, provision of first aid kits, capacity building the community on disease control (e.g. malaria), establishment of Emergency Response Plan (ERP) and ensure a proper channel of communication in case of the pan walls breaking, training of PMC, capacity building the community/workers on safe sex, SEA and GBV, adhering to the Ministry of health and WHO and world bank operation guidelines on COVID 19.

The ESMP will be implemented by the selected contractor, KCSAP, Tana River County Government and other stakeholders. The monitoring of the implementation of the ESMP will be by KCSAP through its County Environment and Social Safeguard Officer (CESSCO) and NEMA officers in terms of enforcement and compliance**.**

The ESMP will form part of the contract with the selected contractor who will be required to prepare and implement a Contractor-specific Environmental and Social Management Plan.

Based on this SPR study finding this report concludes that the project is environmentally sound and will have insignificant adverse environmental impacts which will be adequately mitigated against. Adherence to the guidelines outlined in the ESMP by the proponent, contractor, beneficiary community and other stakeholders guarantee optimum benefits to the proponent and the environment.

The hired construction contractor, the supervising engineer and the CESSCO/CPCU should ensure that the mitigation measures proposed for the construction phase are adhered to. Based on the assessment, the project is, therefore, recommended for approval by the National Environment Management Authority (NEMA) for issuance of an EIA license subject to annual environmental audits after operating for one year.

CHAPTER ONE

1.0 PROJECT BACKGROUND

1.1 General Overview of Proposed sub-project

The proposed Kesi water pan sub project is a community-based project that was identified during participatory integrated community development plan (PICD) meetings, and through community action plan where pasture seed VC was prioritized. It was aimed at supplying irrigation water to the Kesi demonstration farm land for pasture seed production.

Kesi is located within a semi-arid area which is a water scarce region, a situation that is made worse by the present increase in drought frequencies and long duration. To address the water problem situation the community in Kesi have proposed the excavation/construction of the water pan to irrigate the pasture farm hence enhance access to adequate livestock feed through fodder production, management and conservation hence increase the capacity of pastoral communities in range management principles and practices for sustainable utilization of rangelands resources increased resilience to climate change effects. It aims at contributing to poverty reduction, food security and accelerating sustainable economic growth in the area through enhanced rural incomes with the main objective of enhancing drought resilience and improving sustainable livelihood of the community.

The project targets to benefit a **total** of 3,190 people (1600 Men, 750 Female and 840 Youth). The **direct beneficiaries** are 60 Males, 29 females and 31 Youth. **Vulnerable beneficiaries** (poor, widows/ widowers, orphans, physically challenged, elderly, HIV/AIDs affected/infected: 120 Male; 50 Female and 70 Youth.

1.2 Project Justification

The distance to the nearest water point within the sub location is 1 KM to the Hakoka water pan and 7 KM to Chifiri water pan both of which are unreliable and unsustainable during the dry season, the community normally move for very long distances in search of water for livestock and domestic use. The calculated ultimate total water demand based on summing human, livestock, institutional (Hakoka primary school), and fodder irrigation water is 70 m3/ day. The pan is estimated to hold 50,000 m^3 when full.

1.3 The Justification for Summery Project Report

This Environmental and Social Impact Assessment (ESIA) Summary Project Report (SPR) was undertaken under requirements of Environmental Management and Coordination Act (EMCA) of 2015 schedule 31

and 32 that recommends preparation of a summery project report for low to medium risk project. This ESIA (SPR) have assessed both the positive and negative effects that the proposed project is likely to have on both the physical and the socio-economic environment and has proposed appropriate mitigation measure for each of the negative impacts.

1.4 Justification

Pastoral livestock production is the main livelihood source of people of Kesi village Hakoka sub-location and entire Chifiri location. They keep mixed herds of cattle, camels and shoats that solely rely on rangelands for feed resources. However, over the last three decades overstocking, continuous grazing of preferred pasture lands, reduced ability of land to recover following drought has led to land degradation and reduction in forage productivity. The decline in rangeland productivity is exhibited by loss of palatable species, decline in grassland cover, loss of perennial grasses and expansion of bare land and thus reduced production of grazing livestock species such as cattle and sheep. The proposed sub-project is, therefore, justifiable on socio- economic development, water supply infrastructure improvement and enhancing protection and conservation of the environment by restoration of bare land though reseeding and promotion of pasture production that will contribute to increase the acreage under grassland cover with species that have high adaptability to local conditions hence enhancing livestock production which will improve the community livelihoods.

1.4.1 The Purpose of this SPR

This report highlights the environmental and social impacts of the proposed sub project and develops the ESMP as a benchmark for mitigating against the adverse impacts that are anticipated. It provides baseline conditions, highlights stakeholder consultations and opinions and expert advice on the proposed sub project.

1.4.2 The Objectives of this SPR

The overall objective of this Environmental Impact Assessment study is to ensure that the proposed development option adhere to the requirements of the World Bank Environmental and Social Safeguards policies and the Environmental Management and Coordination Act, Cap 387 and other related laws and regulations. This is by identifying the potential negative impacts and develop mitigation measures early enough to ensure that the environmental concerns of the proposed development are integrated into all stages of the project cycle.

The specific objectives are:

i. To identify potential environmental and social impacts of the proposed sub-project, to ensure that they are considered during the sub-project design, construction, operation, and decommissioning stages;
ii. To review the statutory and legislative conditions for the implementation of the sub- project.
iii. To obtain views/opinion of the public and all key stakeholders on the impacts of the project and mitigation measures;
iv. To assess the significance of the impacts;
v. To assess the relative importance of the impacts of alternative plans, design, and sites;
vi. To generate baseline data for monitoring and evaluation of how well the mitigation measures

are being implemented during the sub-project cycle;

vii. To propose appropriate cost-effective mitigation measures to minimize possible negative impacts;

viii. To generate baseline data for monitoring and evaluation of how well the mitigating measures are being implemented during the sub-project cycle;

ix. To develop an Environmental and Social Management Plan (ESMP) to guide the community, proponent and other responsible parties in decision making and implementing the sub-project in an environmentally friendly manner and for future environmental auditing.

1.5 SPR Methodology

In conducting the environmental impact study, the team was guided by the requirement of the National Environmental Management Authority (NEMA) Environmental Impact Assessment Guidelines, section 58 of EMCA Cap 387 and Environmental (Impact Assessment and Audit) Regulations 2003; and the World Bank Environment and Social Safeguards policies.

This ESIA began with environmental and social screening, followed by scoping and the actual study. The study involved the use of several techniques and methodologies. The techniques and methodologies used were necessary for collating baseline information, understanding the legal and policy framework, predicting the potential impacts, assessing the nature of the impacts and determining the order in which the impacts are to be avoided and or mitigated. The methods used in the study are as discussed in the sections that follow.

1.5.1 Desktop study

This included a documentary review on the nature of the proposed activities, sub-project documents, designs policy and legislative framework as well as the environmental setting of the area. Other documents reviewed include: KCSAP Project Appraisal Document (PAD), EMCA Cap 387 Revised 2015, Water Act 2016, Tana River County CIDP 2018-2022, 2019 Census Reports, World Bank Environment and Social Safeguard Framework

1.5.2 Key informant interviews

Key informants interviewed include: water Officer, agriculture, livestock, and veterinary officers, the local administration; ward administrator Wayu Ward, Chief Chifiri Location, members of Kesi Water pan sub project management committee, KCSAP CESSCO and Coordinator. A total of 8 key informant interviews were administered including government officers and the beneficiary community. The aim of the interviews was to; understand the implementation of Kesi water subproject in the area and to collect views on the potential impacts of the project and ways of addressing the adverse effects.

1.5.3 Individual Questionnaires

This involved the use of a list of questions filled in by the local stakeholders and the beneficiary community members in the project area. The purpose was to get their views on the project in terms of benefits, potential negative impacts and possible solutions and whether they felt the project should be implemented or not. A total of 50 questionnaires were distributed out of which 40 were filled and returned (refer to annex 2; ESIA individual questionnaires)

1.5.4 Consultation meetings

One consultation meeting was conducted between the proponent and EIA experts. The purpose of the meeting was to gather information, to formulate the TOR and to acquire the required documents for desktop review from the proponent.

1.5.5 Field Site Visit

This was meant for physical inspections of the site characteristics of the environmental and socio-economic status of the surrounding areas of the proposed sub-project location so as to determine the anticipated impacts. The purpose of the field site visits was.

- Obtain available and relevant information and data from the local public offices including Agriculture, Livestock, water, environment, public health, social development and the Local administration.
- Evaluate the environmental setting around the proposed project site. Observation focused on topography, land cover, flora and fauna, climate, hydrology of the area and public amenities among others
- Evaluate social, economic and cultural setting in the entire project area
- Undertake a comprehensive consultative public participation exercise to a large section of the affected persons as well as stakeholders.

1.5.6 Public participation and Stakeholders Consultation/Disclosure

Public participation was conducted on 23/06/2021 and was attended by 45participants; 30 males and 15 females (refer to annex 1 for attendance list). Publicity was done through local administration and posters which were placed at strategic points. The purpose of public participation was to ensure public involvement, consultation and to foster project ownership. The process helped to disclose the project components to the community for them to understand what the project entails and formed a useful component for information gathering, understanding and establishing likely impacts of sub-projects as required by the law. The beneficiary community had

a chance to give their views in terms of potential benefits and adverse effect which have been incorporated in this report.

1.6 Covid -19 Infection prevention and control measures

The preparation of the SPR including the relevant consultations was undertaken in strict compliance with guidelines for COVID-19 infection prevention and control in the country. Additionally, specific mitigation measures have been introduced to prevent the spread of the pandemic during the construction period. Moreover, consultations required as part of the mitigation measures, such as during training on environmental and social issues, also pose a risk of infection to communities. For this reason, the risk of contracting the virus during consultations will be avoided, minimized and mitigated with specific measures to ensure national requirements on social distancing and recommendations on how to minimize contact are adhered to.

1.7 Chapter Outline

The aim of this SPR is to examine and analyze anticipated environmental impacts of the proposed development in line with the World Bank Social Safeguards and EMCA Environmental (Impact Assessment and Audit) Regulations, 2019. Consequently, the report is organized into ten chapters. Chapter 1 gives the introduction, Chapter 2 presents the nature of the proposed project and project activities while, Chapter 3 presents the environmental and social baseline information of the study area., Chapter 4 presents the outcome of the public participation and stakeholder's consultation process, Chapter 5 identifies and discusses the environmental and social impacts and mitigation measures of the project. Chapter 6 presents the environmental and social management plan (ESM&MP) while Chapter 7 deals with the conclusions and recommendation. The References and Annexes then follow in Chapters 8 and 9, respectively.

CHAPTER TWO

2.0 NATURE OF THE PROPOSED SUB-PROJECT AND SUB-PROJECT ACTIVITIES

2.1 Proposed sub-projectoverview

2.1.1 Sub-Project Details

Name of the proponent: Kesi water management committee

Nature of business: Water pan excavation.

Date of assessment: June 2021

GPS Location: Latitude:01 16’45 5 and Longitude: 39 28’32’’ E

Physical Location: Kesi village in Chifiri Location, Wayu Ward, in Galole Sub-County of Tana River County. It is located 89 Km from west of Hola.

2.1.2 Proposed Sub-project landOwnership

The proposed sub-project is located on a 30 acres piece of land set aside by the community for purpose of pasture production and excavation of the 50,000M^3 water pan. A letter of no objection from the County government has been annexed into this report.

2.1.3 Sub-project AreaDescription

The site is about 89 km from Hola town which is the County headquarters. The proposed sub-project will serve 800 households having a current population of about 3,700 people within Kesi village. The main livelihood is nomadic Pastoralism. The livestock population is about 1541 cattle, 1800 goats and 979 sheep. The area is water scarce and the land grass cover is diminished. The main trading area is the Chifiri and Wayu center. Current situation of the sub-project area is one of the areas in Wayu Ward that has no reliable water source, especially during the dry season when both Hakoka and Chifiri water pans dry up which are the main source of water in the area. Sometimes during drought, the area is put under water trucking by the County Government of Tana River.

2.2 Sub-project concept

Rainwater harvesting provides an alternative and reliable water source by construction of a structure to harness surface water. Although initial costs are high, in the long-term the operation and maintenance costs are minimal.

A water pan is highly functional in the arid and semi-arid regions (rainfall between 200 and 750 mm) – even semi-desert (< 200 mm) depending on water availability (scarcity) and available catchment area (suitable landscape). They usually provide water for domestic, livestock and small-

scale irrigation. The sub-project site is within a semi-arid area and the proposed sub-project found to be an appropriate alternative source mainly for fodder production and livestock use.

The proposed sub-project entails construction of a **50,000m^3** water pan, with the works mainly comprising excavation of the water pan, excavation and construction of silt traps, reinforcement of the embankment, construction of inlet, spillway and other auxiliary works like installation of solar water pumping system, tanks, cattle troughs and provision of a sanitary facility.

Photo: Proposed Kesi water pan site

2.3 Design of the Proposed Kesi Water Pan Sub-project

The design for Kesi Water pan sub-project was developed in accordance with the requirements of the Water Act *(No. 43 of 2016)*, the National Water Harvesting and Storage Regulations, 2019, the Water Resources Regulations, 2019 and the NEMA, Environmental Management and Coordination (Water Quality) Regulations of 2006 and the general guidelines and standards used in the design of water pans (small earth water pans) and water supply sub-projects in Kenya. These regulations, standards, and guidelines are in line with international standards for best practice.

The services of qualified water resource professionals were used to undertake a hydrological assessment of the sub-project area and design the water pan and other auxiliary structures accompanied by the water pan report. Figure below shows project layout and key design features.

Figure: Project Layout and key Design Features

2.3.1 Water Availability in the Project area and Quality

There is no permanent source of water in Hakoka sub location, presently, Hakoka water pan is the main source of water but sometimes it dries up during dry seasons and any severe drought. The water pan water is contaminated and we recommend for testing, to ascertain the quality according to the Environmental Management and Coordination (Water Quality) Regulations LN No 120 of 2006 which stipulates water quality standards and the set standards e.g. WHO standards for the livestock, the use of water of lower quality than required for domestic water supply is permitted. In general, domestic, livestock water supply and pasture production is the main purpose of the construction of the Kesi water pan. It should, however, be noted, that in order to avoid severe pollution of the water pan, straight watering of livestock from the water pan should not be allowed. In the knowledge of this, a draw-off system complete with cattle troughs, for the cows and shoats (small stocks-goats and sheep) has been incorporated in the proposed project design. Water pans have been used successfully to harness/ harvest rain water runoff and support agricultural activities which provide a significant livelihood, nutritional and food security benefits.

2.4 The water Pan Design

In the design of this pan, the following factors were taken into consideration: -rainfall data, water demand both by livestock, wildlife, and domestic use, catchment area, the available land for consideration, wind speeds and temperature data of the area, soil types and test pits results, the population currently and their sub-projection for the design period, land use and use of generally accepted principles and standards of designing.

2.4.1 The Proposed Works

Construction of the water pan will involve: clearing of the site, excavation of water pan reservoir and construction of wall embankment, construction of draw-off system with fabricated intake tower, well-anchored draw-off pipe, construction of valve chamber, construction of silt traps, cattle troughs and communal draw-off point, laying of a short connection pipe to cattle and communal water point, construction of spillway, laying of gabion boxes across water inlets to check silt getting to the water pan, construction of VIP latrines (double – for male and females), fencing of the water pan, installation of elevated water tank and installation solar water pump.

The construction will begin with vegetation clearance and excavation of the pan and pushing soil to form embankment as per the design drawing. The water pan depth shall be excavated to a maximum height of 4 m and with a freeboard of 72 m.

The excavated material will be well sorted out and deposited along the span of the embankment, spread, watered, and compacted using a suitable compactor.. Implementation of the proposed sub-project will require the use of the following materials; cement, fencing poles, barbed wire, chain-link, ballast, sand, GI pipes, filter material. The construction exercise will result in the production of hips of soils, debris, and plant biomass. These materials will be well managed, by-products used or recycled, and wastes disposed off according to the Environmental Management and Coordination (Waste Management) Regulations LN No 121 of 2006 which deals with the handling

of waste products.

2.4.2 Spillway

The function of the spillway is to discharge the normal and flood flows safely around the embankment and back to the watercourse without compromising the long-term functionality and integrity of the pan. The common type of spillway used with earth embankments is a side- channel spillway, excavated in earth or rock next to the embankment. The spillway is designed as per the water resource regulations 2019. Regular maintenance of the spillway will be undertaken to ensure it functions well.

2.4.3 Draw off System and Valve Chamber

Due to the risk of pollution of the reservoir from human or livestock contamination, it is preferable to provide a draw off system that delivers water below the water pan.

The proposed design of the draw-off system consists of intake at the bottom of the reservoir with a draw-off pipe passing through the embankment. This pipeline is then connected to a solar-powered pump or valve chamber from where water will be pumped to an elevated water tank and then distributed for irrigation.

2.4.4 Animal Troughs

2 animal troughs are proposed for the water sub-project. One to be used for large stock (cattle & donkeys) and the other one, which will be a bit shorter, will be used by small stock (goats and sheep).

2.4.5 Communal Water Point

This will consist of 1" dia. Standpipe with a tap and a simple soak pit

2.4.6 Gabions

There will be construction of gabions across the water pan at some strategic points. This will be positioned with guidance from the supervisor. The aim is to control erosion and siltation.

2.4.7 VIP Latrines

As part of sanitation improvement, VIP latrines are proposed downstream of the water pan to be used by the community while drawing water from the water pan. The latrines are to be of two units (for men and women). This is expected to enhance sanitation around the water pan and prevent water contamination. In meeting the provided COVID 19 containment measures by WHO, WB and the PH hand washing equipment will be provided including soap in an appropriate location of the latrine for washing of hands.

2.4.8 Fencing

In order to safeguard the water pan from intruders, especially from playing children and those contemplating suicide, and also to prevent livestock/wild animals from entering into or drowning, the water pan is recommended to be fenced with concrete poles, barbed wire, and chain-link. This is also to bar livestock from drinking water directly from the water pan.

2.5 Proposed Sub-project cost

The sub-project will have a total investment cost of Kshs. **38,885,000**

CHAPTER THREE

3.0 LOCATION OF THE PROJECT

3.1 Introduction

This chapter gives a description of the environmental setting of the proposed sub-project area and its environs in terms of its physiographic and natural conditions, biological and socio- economic environment.

3.2 Physiographic and Natural Conditions

3.2.1 Site Location

The site is in Kesi village in Hakoka sub location, Chifiri location, Wayu ward within Galole Sub County of Tana River County. The site can be assessed through a murram road 29KM off Hola Bura highway. The site is approximately 89 KM west of Hola town. . Tana River County is located in the coastal region of Kenya. The county borders Kitui County to the West, Garissa County to the North East, Isiolo County to the North, Lamu County to the South East and Kilifi County and Indian Ocean to the South. The county straddles between latitudes 00 0'53" and 20 0'41'' South and longitudes 380 30' and 400 15' East and has a total area of 38,862.20 Km^2.

3.2.2 Climate, Topography, Geology and Soils

The region has a hot and dry climate within ecological zones ranging from III (in the very high grounds) to VII (in the plains or lowlands). Average annual temperatures are about 30°C with the highest being 41°C around January-March and the lowest being 20.6°C around June-July. Rainfall is low, bimodal, erratic and conventional in nature. The total annual rainfall ranges between 280 mm and 900 mm with long rains occurring in April and May, short rains in October and November with November being the wettest month. The Inter Tropical Conventional Zone (ITCZ), which influences the wind and non-seasonal air pattern for the river Tana, determines the amount of rainfall along the river line. The dry climate in the hinterland can only support nomadic pastoralism.

The major physical features in Tana River County is an undulating plain that is interrupted in a few places by low hills at Bilibil (around Madogo) and Bura administrative sub-units which are also the highest points in the county. The land in Tana River generally slopes south eastwards with an altitude that ranges between 0m and 200m above sea level. The most striking topographical feature is the river Tana that traverses the county from the Aberdares in the North to the Indian Ocean in the South covering a stretch of approximately 500km. Besides the river Tana, there are several seasonal rivers in the county popularly known as lagas, which flow in a west-east direction

from Kitui and Makueni Counties draining into river Tana and eventually into the Indian Ocean. The river beds support livestock as well as wildlife during the dry season since they have high ability to retain water. River beds are most appropriate sites for shallow wells, sub-surface dams as well as earth pans.

The soils range from sandy, dark clay and sandy loam to alluvial deposits. The soils are deep around the riverine environments but highly susceptible to erosion by water and wind. Soils in the hinterlands are shallow and have undergone seasons of trampling by livestock, thus are easily eroded during rainy seasons.

3.2.3 Water Resources

The most striking topographical feature is the river Tana that traverses the county from the Aberdares in the North to the Indian Ocean in the South covering a stretch of approximately 500km. Besides the river Tana, there are several seasonal rivers in the county popularly known as lagas, which flow in a west-east direction from Kitui and Makueni Counties draining into river Tana and eventually into the Indian Ocean. The river beds support livestock as well as wildlife during the dry season since they have high ability to retain water. River beds are most appropriate sites for shallow wells, sub-surface dams as well as earth pans.

3.3 Biological Environment

3.3.1 Flora

The vegetation ranges from scrubland to thorny thickets within the riverine area. Shrubs and annual grasses dominate most parts of the region. However, there are enclaves of trees and perennial grasses dominating wetter parts. An invasive tree species called Prosopis Juliflora, commonly known in the area as 'Mathenge' (named after the person who introduced it) has spread rapidly in the area and is threatening to replace most of the indigenous vegetation. It was introduced for fuel-wood production in the Bura Pilot Irrigation Scheme. It grows fast and chokes other vegetation, watering points and the canals, and is colonizing most of the areas that are not cropped, including the riparian environments.

3.3.2 Fauna

The wildlife in this area includes; *tortoise, hyenas, lizards, and snakes.* The proposed project site is not in a protected area and is not home to any endangered or threatened animal or plant species. It also does not have a corridor for any animals. There is no protected wildlife in the sub project area or any wildlife that has been identified for special protection.

3.4 Socio-Economic Environment

3.4.1 Land-use and land tenure

The land in the county is largely non-arable covering 29,798.7 km^2. The rest is either under forest 3,457 km^2, arable land covering 2,547 km^2, and 3,059.5 km^2 under national reserves. About 90% of land in Tana River County has not been registered, and is either community land or government land. The inhabitants do not therefore have title deeds which can be used as security to acquire loans from banks. This is a major loophole which land prospectors and the National Government take advantage of acquiring land at the expense of the locals this has and can be potential source of conflicts, especially land within and around the county headquarters and along the coast line. The absence of individual or group parcels land title deeds has in some cases led to underutilization of land resources. The challenge for the county is therefore to ensure that land regimes in the county are favourable for productive activities.

The land for the proposed sub project development is under communal land ownership in the administration of the Tana River County Government. The land is set aside for public utility, therefore, fits in with the proposed community water project (water pan) and the proposed fodder propagation.

3.4.2 Demographic Dynamics

The projected population of Tana River County in 2018 is estimated at 313,374 with 157,282 being female and 156,092 males. This is expected to increase to 344,595 in 2020 and to 366,661 by 2022, reflecting about 17.7 per cent increase. The county has an inter census population growth rate of 2.83 per cent slightly lower than the national average of 2.9 per cent. The ratio of male to female is 99:100 and the pattern is projected to remain the same over the plan period.

In 2018, the estimated populations for Bura, Galole and Garsen are 108,131, 79,732 and 126,626 respectively. The population for Garsen Constituency is highest, representing 40.2 per cent, followed by Bura (34.4%) and Galole (25.4%). This trend is expected to remain the same in 2020 and by 2022. The estimated population of the project area (Chifiri Location) is 3700.

3.4.3 Agro ecological Zones and Livelihood

The county is divided into four agro- ecological zones namely: CL 3 Coconut – Cassava zone (non ASAL), CL4 Cashew nuts- Cassava zones where the main economic activity is peasantry mixed farming; CL5 Lowland Livestock zone and CL6 Lowland Ranching zones where the locals are involved in pastoral activities.

3.4.4 Educational Institutions andLiteracy

Pre-School Education

The county has 315 ECDE centres with 462 teachers. The gross enrolment rate is at 56.3 per cent with a teacher pupil ratio of 1:51. The enrolment of boys and girls is at 55.6 and 42.7 per cent respectively. There is an ECD class within Hakoka primary school which is within the project area.

Primary Education

The county has 152 primary schools with 1,219 teachers giving rise to a teacher pupil ratio of 1:40. However, the available schools are not evenly distributed. The average gross enrolment is at 60.4 per cent with boys' enrolment rate standing at 68.5 per cent while that of girls stands at 51.9 per cent. Hakoka primary school which is within the project area has a population of 168 students.

Literacy

The literacy rate for the county is 33.7 per cent and the illiteracy rate is at 66.3 per cent. However, this data is not disaggregated between male and female.

Secondary Education

The county has 52 secondary schools with 150 teachers. The teacher/student ratio is 1:32. The net enrolment is 4,903 with 1,603 being girls and 3,300 boys. The girl population is so low due the high drop-out rate arising from early marriages and pregnancies. There is no secondary school within the project area.

Tertiary Education

There are no colleges or universities in the county. Concerted efforts need to be directed towards the construction of tertiary institutions in the county to boost transition rates and build on the human resource base.

3.4.5 Health Facilities and Human Disease Prevalence

The only health facility within the project area is Chifiri dispensary which is about 8 KM from Hakoka sub location. However, there are 71 health facilities in the county with two level four public hospitals located in Hola and Ngao. There is one sub-county hospital in Bura, five public health centres, 40 dispensaries and 20 private clinics, two mission dispensaries and one private health centre. The bed capacity is 158 while the average distance to a health facility is six kilometres. The county has six doctors, 126 nurses, 1,149 CHEWs, 25 PHOs, and three nutritionists against a projected population of 265,854. Tana River County has low numbers of healthcare providers owing to difficulties in attracting and retaining them. There is ~~a~~ chronic shortage of personnel in almost all areas of medical practice and management. The SPR has provided measures to address some of the diseases likely to spread because of the implementation of this sub project such as malaria fever, HIV/AIDS and COVID 19.

3.4.6 Water and Sanitation

The responsibility for water supply and sewerage in Tana River falls under Tana Water and Sanitation Company (TAWASCO). Also, some of water is managed by CBOs like Witu Water Users Association (WIWA) in Kipini. Sewerage services in the county is yet to be developed. Coast Water Services Board carried out a feasibility study on solid waste management and gave

out some recommendations for implementation of urban solid waste management which is yet to be implemented. Service standards are set and monitored by a national water regulatory agency called the Water Services Regulatory Board (WASREB).

The reference on sanitation is on housing-ventilation and rendering of floors and walls of buildings, provision of dish-racks, cloth hang-line, waste disposal at household level and public in general at market centres. At the market centre level the attention is on waste disposal. Of all the centres, only Hola has a Public toilet, collection of waste is done by the county government within Hola town and there is no designated disposal point for the waste. The situation in most of our institutions especially schools, is reasonably good as they have latrines albeit not adequate. Generally, the average sanitation level in the county is at 48 per cent. As much as 40 percent of the households in the county have pit latrines, five percent of which are uncovered. Open defecation by adults and disposal of children feaces in the open is still rampant in most rural areas of the county. The use of buckets is disappearing and only three households still use them. The County has never developed a sewerage system but Coast Water Services Board commissioned a feasibility study on Water and Sanitation Improvement. The project objective was to identify sound, feasible and rational strategies through to 2040 for the development of wastewater management services for the growing urban centres on the Coast region including developing logical Framework Matrix for Planning, Design, implementation and Evaluation of the Wastewater Management Strategies.

3.4.7 Sources of Energy for lighting and Cooking

Majority of the population (87.5%) use wood fuel for cooking and 78.2 per cent use kerosene for lighting. Only 0.9 per cent of the households are connected with electricity. There is a lot of potential for the exploitation of renewable energy sources such as solar and wind, and expansion of electricity transmission in the county through the main grid.

3.4.8 Household Headship

In the sub project area household headship is culturally recognized as a male responsibility. However, there are situations where a woman or children may take over the headship of the household. Female headed households in Tana River are as a result of separation, spouse passing on or never being married.

3.4.9 Transport and Communication Infrastructure

The total road network in the county is 3,377km with about 55 per cent in motorable condition. The total road network is composed of 1,108km (class A – E) of classified roads and 2,269km (class U) of unclassified roads. Out of this only 449km is bitumen surfaced. The major roads in the county include the Madogo – Hola – Malindi road which is dilapidated and impassable at various points during rains. The Kenya National Highways Authority (KeNHA) has however put in place plans to upgrade the 330km stretch to bitumen standard, and the project is in the design

phase and construction is set to begin as soon as funds are available. The county boasts of seven airstrips with major ones located at Hola, Bura and Garsen. The county has a 76Km sea front with Kipini operating as a fish landing site which can be potential sea port for fishing vessels. The LAPSSET project will potentially open up the county with road and rail network.

The county is served by three mobile phone service providers that cover 55 per cent of the county. These services are however concentrated along the Garissa- Malindi road. There are three post offices in the whole county located at Bura, Hola and Garsen. The landline is in deplorable state and does not function in most areas. There are five courier service providers in the county. Internet connectivity is still low with most people using modems from mobile phone service providers. Investments in DSTV, Zuku and other free to air satellite television has nevertheless made access to local and international broadcasts possible in the county . The Kenya Broadcasting Corporation (KBC) Radio is the only media house which has a signal in the county.

3.4.10 Conflict and Grievance Resolution Mechanism

Grievances or disputes refer to conflicts that affected households, including those that do not pertain to the legal system. The instruments used in the resolution of the reported conflicts are; chief/assistant chief extended family members, directly to the other party, traditional leaders/ elders, extended family members and other national government officials such as ACC.

Each KCSAP implemented project at the community level has the Grievances and Integrity Committee comprised of five members and is responsible for the management of conflicts that will arise from the implementation of projects. The mentioned conflict resolution mechanisms will work together with the sub projects grievance committee. The chief's office is the mostly used and preferred for conflict resolution in Tana River County.

3.5 Community Organization

The community to benefit from the Kesi water sub-project has organized itself. It has an interim committee that will spearhead the implementation of the sub-project. Part of the team was present during the SPR public participation of the water pan sub-project and they gave useful information to the team along with the local area leaders such as the ward administrator and the areas assistant chief. The sub-project shall be managed through an elected community management committee. The committee shall be trained on sustainable water sub- project management.

3.6 Markets and Urban Centres

There are 10 major trading centres in the county with 24 registered wholesale traders and 773 registered retail traders. There are two registered Jua Kali associations in the county with 31 members. These trading centres are the main economic hubs of the county since major business activities are done here.

CHAPTER FOUR

4.0 PUBLIC PARTICIPATION AND STAKEHOLDER CONSULTATIONS

4.1 Introduction

Public participation is an essential and legislative requirement for environmental authorization. The environmental experts undertook the public Participation & stakeholder consultation (PP& SC) with regard to the proposed construction of Kesi Water Pan. The public consultation was undertaken to obtain information from interested and affected parties (stakeholders), solicit their views and consult on sensitive issues. The output is incorporated in the development of mitigation measures. Different stakeholders were of different opinion regarding the proposed water pan.

4.2 Objectives of Public participation and Stakeholder Consultations

The main objective of the public consultation is to engage key stakeholders' groups to provide their inputs into the planned development and especially on those impacts that directly affect the Kesi community. The specific objectives of the public participation and consultation in this SPR are to.

1) Build up confidence between the stakeholders and the proponent to minimize the risk of delays in the implementation of the Kesi water sub project.
2) Help the project sponsors to make informed assessment of public opinion about the project, and the nature and extent of opposition likely to occur during the implementation stage.
3) Bring out the contentious issues and gives a chance to those who may be affected by the proposed project to give their views.
4) Have a fair interaction with affected groups and ensure them that every attempt would be made to minimize the negative impacts of the Kesi water pan sub project.
5) Get No Objection from the members of the public and the affected community on the implementation of the project.
6) Foster community ownership of the project.

4.3 Approach used in carrying out the Public Stakeholder Consultations

The public consultations with community/village members was held on 23rd June, 2021.
These stakeholders included the adult males and females as well as male and female youth from the communities in the village. Their responses were captured using structured public stakeholder consultation checklist. Copies of the completed public stakeholder checklists, structured questionnaire, minutes of the stakeholder consultation and plate of photograph are attached at the end of this report (Annex……). Key informant interviews/discussions were also conducted with relevant technical personals from the county government, Kenya climate smart agriculture, local administration and Community members.

4.4 Stakeholders Comments/Concerns

a) Environment Health and Safety Concerns

Environment, Health and Safety impacts ranged from anticipated dust pollution, noise pollution, soil degradation through erosion by both livestock and human traffic.
There were concerns of possible water pollution if the pan was not fenced and troughs provided away from the pan and that the uncontrolled access would lead to waterborne diseases mainly brought by wildlife. The area is often visited by wildlife and some respondents feared possible human wildlife conflict while others foresaw hazards such as drowning by both livestock and children.

b) Socio Economic Issues

Employment opportunities during construction and operation phases were lauded as the major benefits that will accrue from the excavation of the water pan as viewed by the respondents. This would also see the standard of living improved as a result of reduced distances travelled by women and children in search of water. Irrigation will also lead to the improvement of community's livelihood.

c) General Concerns

General issues from the stakeholders largely involved requirements to sustain the lifespan of the water pan and maximize its benefits. These included provision of cattle troughs, fencing and training of the water committee on such matters of management of the water pan. Need for silt traps to be constructed in order to prevent soil erosion.

4.5 Summary of Issues Raised by the Community and Stakeholders

The issues raised during Community and other stakeholders' consultative meetings are as highlighted in table below.

Issue	**Aspect/Concern Raised By Stakeholders**	**Suggested Mitigation Measure**
Security	Possibilities of human and wildlife conflicts.	Fencing of the water pan
Employment of local people	Job opportunities for the skilled and unskilled during and the construction of the water pan	Provide opportunities to the available local skills especially the youth, women and widows
Drowning	Risk of children, animals and drunkards or people with psychiatric issues drowning in the pan	Fencing of the water pan and provision of security Sensitization of the community

Water pan siltation	Degradation of the catchment and inflow channels	Sensitization of community members on management of the water pan catchment Re-vegetation of the catchment
Water pollution	It was raised because of livestock drinking water directly from the water pan and lack of sanitary facilities at the water pan	Consider fencing of the water pan and having only one entry with a gate. Provide Sanitary facilities as per the designs
Increased disease incidences both human and livestock	There was concern over increased disease incidence due to lack of treatment of the pan water and also due to livestock converging at the drinking points due to mixing of animals.	It was agreed the MOH to provide community with drugs to treat water for domestic use and Sensitization of the community on livestock disease control monitoring and prevention intensify disease and pest surveillance
Water demand	Concern was raised whether the water in the pan would be enough for fodder production, livestock and domestic use	The pan will be constructed in-line with the engineer's requirement
Noise pollution	A concern was raised on noise pollution during excavation	It was agreed that the site is away from settlements and also construction period was short and therefore the community could bear with it
Risk of accidents	It was noted that children and adults as well would be exited to visit the site during construction and therefore prone to accidents	It was agreed the water sub-committee would sensitize the community on the matter to avoid the risks
Air pollution due to dust	A concern was raised on air pollution during construction/ excavation	Sensitization of community to avoid visiting/ overcrowding the site during the construction phase
Increased incidences of malaria infection	There was a concern on increase in malaria incidences due to increased mosquito larvae in the pan	MOH to provide the residents with mosquito nets and repellants Introduce fingerlings to feed on the larvae.

NB: The concerns raised by the community were addressed by the relevant parties present in the meeting. The mitigation of these impacts is however outlined in the ESMP the proponent is urged to continue adhering to the Construction Environment Management Plan that outlines how construction activities can be carried out with minimal interference.

CHAPTER FIVE

5.0 ENVIRONMENTAL AND SOCIAL IMPACTS AND MITIGATION MEASURES

5.1 Introduction

This chapter largely focuses on the anticipated impacts from the excavation of Kesi water pan. Impacts to the environment can be positive or negative, direct or indirect, reversible or irreversible. The extent of the environmental and social impact is determined by its significance and adversity, as well as its temporary or permanent state, long or short-term effect, localized or widespread nature.

A number of positive and negative anticipated impacts to the environmental and social wellbeing have been identified. Among the broad areas of impacts include:

i. Waste generation; soil erosion and sedimentation; dust emissions; Oil spills; and occupational health and safety issues during the construction phase; and

~~iii.~~ii. Positive impacts such as increased availability of water, improved business opportunities, as well as negative impacts on biological diversity and occupational health and safety issues during the operations phase.

5.2 Impacts during construction

5.2.1 Positive Impacts

The following potential impacts have been identified during the construction phase:

i. Increased availability of water throughout for both domestic and livestock use
ii. Employment generation and income opportunities for the contractor, construction staff, and other professional service providers; and unskilled labour provided by the local community
iii. Reduced migration thereby keeping children in school
iv. Reduced livestock deaths from the shocks of drought
v. Reduced distance to water sources, leaving more time for other productive engagements
vi. Improved wellbeing and health of the community
vii. Increased businesses through sourcing of raw materials locally.

5.2.2 Negative Impacts

5.2.2.1. Waste generation

Waste during the construction period will arise from: spoil during excavation work, deleterious material from aggregate screening; maintenance and repair of machinery and workers domestic waste (face masks). The most appropriate options in waste management are: identification of the waste types; segregation into the various categories; and the establishment of suitable mechanisms for collection, storage, transfer, and final disposal.

Mitigation Measures for Solid Waste

i. *Domestic solid waste to be stored in refuse bins temporarily before being taken away for proper disposal in designated areas as advised by local environmental officers.;*
ii. *Excavated soil shall be disposed at a minimum distance of 20 meters on the opposite side of the inlet and compacted for use*
iii. *Proper disposal of face mask during this period of covid-19 as advised by the local health workers.*
iv. *Use of part of excavated soil to fill unlevelled grounds within the pan area*

5.2.2.2 Soil erosion and sedimentation

Construction activities have the potential to loosen soils, particularly on slopes, which can then be washed down into the lower areas (streams and valleys) and soil quality degradation is also likely to occur during construction as a result of disposal of construction materials on the adjacent lands,

Mitigation Measures:

i. *Excavated earth should be held on locations of the site not susceptible to storm water runoff. The earth removed for external disposal should be deposited carefully on selected sites without the risk of being washed away during heavy rains and where such deposits will not compromise other land use a6ctivities in the areas affected; and*
ii. *Re-vegetation of exposed areas around the site should be carried out rapidly in order to mitigate erosion of soil through surface water runoff and wind erosion*
iii. *Train the beneficiary community on soil and water conservation measures*

5.2.2.3 Loss of Vegetative Cover

During the construction phase of the project, bush and tree clearing will be undertaken in the areas to be inundated to minimize the impacts of water pollution from decaying vegetative matter that would die after inundation. Actual construction activities will lead to further loss of vegetative cover at the site of the construction camp for the workers who are likely to be engaged in the actual construction activities. This impact is however not expected to be significant. While no endangered or threatened species were identified in the area, clearing and subsequent inundation constitutes a loss of biodiversity on flora. The vegetation is also home to many invertebrate and avifauna, who will be rendered dispossessed of their habitats.

Mitigation Measures

i. *Undertake enhanced planting of trees along the buffer zone and the adjoining areas where the vegetative cover is evidently sparse as outlined in the ESMP; and*
ii. *Rehabilitate through reinstatement and tree planting all sites that are being used for construction activities such as camps, materials site (borrow pits and quarries) sites for storage materials and*

any paths, tracks that may be established during the construction phase and the water management committee should take charge of ensuring sustainability of this

5.2.2.5 Air Quality

The following emissions will be expected to result from construction activities. This would in turn lead to poor quality of life as well as upper to lower respiratory infections and silicosis condition:

i. Dust from excavations and earth moving vehicles as well as materials delivery;
ii. Emissions such as smoke, hydrocarbons and nitrogenous gases among others from machinery exhausts

Mitigation Measures

i. Personal protective equipment (PPE) such as dust masks must be worn in the immediate vicinity of the operations during excavation;
ii. The stockpiles of earth generated during construction works should be suppressed by spraying water or water-based mixtures. Spraying should also be carried out on unpaved road accesses regularly;
iii. All machinery and equipment should be maintained in good working order to ensure minimum emissions including carbon monoxide, oxides of Nitrogen and Sulphur, as well as suspended particulate matter;
iv. *Drivers of construction vehicles and delivery trucks should be cautioned to drive slowly near the site to avoid creating dusty conditions. The drivers of construction vehicles and delivery trucks must be supervised so that they do not leave vehicles idling and limit their speeds so that dust levels are lowered*

5.2.2.6 Risk of leaks and spills

Petroleum hydrocarbons present both an environmental and fire risk. The storage of petroleum hydrocarbons on site presents a hazard source and the release of hydrocarbons into the environment could result in significant impacts on a variety of receptors. The pathway for pollution is soil or water, and the primary receptors include the sub-soil and groundwater. Other receptors include air (from fuel vapors) and people (through dermal contact, inhalation or ingestion). It is however worth noting that the risks of a major oil spillages occurring are minimal.

Mitigation Measures:

i. Regular maintenance of site equipment and machinery should be carried out to ensure any leakages are detected and controlled. The motor vehicles and heavy equipment should be serviced according to manufacturer's requirements to limit the exhaust emissions, and servicing and re-filling should be undertaken in designated yards.
ii. Investigate the possibility of fitting catalytic converters especially for the heavy equipment to convert harmful substance in the exhaust fumes to less harmful substances;

iii. *Safety procedures for fuel storage and re-fueling should be well understood and implemented by site staff; and*
iv. *Oil residuals including waste oil, lubricants, used filters, should be carefully collected and stored for safe disposal, in order to prevent migration of contaminant hydrocarbons into storm water or groundwater resources.*

5.2.2.7 Occupational Health and Safety Issues

Trips and Fall Hazards

Potential impacts during construction include: exposure to physical hazards from the use of heavy equipment; trips and fall hazards; and exposure to dust and noise. The uncontrolled proximity to high vehicular traffic during transportation of construction materials and equipment may lead to injuries or fatalities due to traffic accidents. Other injuries or fatalities may result from workers operating equipment without adequate training or with a lack of personal protective equipment or extended exposure to outdoor weather resulting in heat-related lethargy.

Mitigation Measures:

i. *Ensure all equipment is inspected before use for appropriate safe guards and that the machine operators are trained on machine safety;*
ii. *Ensure the working hours are controlled and that employees are not allowed to extend the working hours beyond an acceptable limit for purposes of gaining extra pay; and*
iii. *If blasting will take place, ensure the blasting and other high-risk activities are carried out under access restriction. Only authorized persons are to access the blasting areas. Train first aid personnel and provide a fully stocked first aid box to respond to any injuries due to the activities*
iv. *Ensure provision of PPEs, training of site workers and users on OHS*

5.2.2.8 Noise and Vibration

There will be noise and vibrations generated during the construction phase but it will be no different from that on any other typical construction site. The noise impact during construction is expected to be negative and short-term.
Major sources of noises and vibration will come from: drilling during construction equipment to place charges and earthmoving machinery, as well as noise from the work force itself. The major receptors are expected to be the construction workers as well as any immediate neighboring premises.

Mitigations Measures:

i. *Conduct noise monitoring to determine levels and extent of harmful noise and provide ear muffs to persons who must operate within or visit the identified high noise areas;*
ii. *Inform local residents of any abnormal noise generating construction activities to minimize disruption to local resident;*
iii. *Where blasting is needed, the contractor will obtain blasting permit from the county government and follow the conditions of the permit*

5.2.2.9 Camp Site

The project is likely to have camp site, namely workers camps and operation camp (offices, stores and workshops). The anticipated impacts to the environment would be as follows:

i. Workers camps associated with domestic wastes (sewage and garbage) running into water sources and land. People's health would be at risk,
ii. Uncontrolled disposal of wastes could also be a nuisance to the local inhabitants and the environment,

Mitigation Measures:

i. Exhaust and rehabilitate one material site before opening another section;
ii. Provide PPE for employees (safety gears) and safety warnings for the public;
iii. Ensure campsite is well fenced and with designated entry/exist sites
iv. Ensure reduced stagnation of water in abandoned quarries and borrow pits by regularly disinfecting stagnant water and clearing bushes;
v. Ensure spoil is dumped at only designated sites.

5.3 Impacts during Operations and Maintenance

The following potential impacts have been identified during operations and maintenance:

5.3.1 Positive Impacts

It is anticipated that the operations phase of this project will result in:

i. An improvement in the standard of living of the beneficiary residents. More specifically, a reduction in the distances traveled and time spent in search of water, especially for women. This would in turn allow them to spend their energy and time on economically and socially viable activities for their families;
ii. Reduction in water related conflicts;
iii. More access to water by community satellite herds during dry season;
iv. Food, nutritional and livelihoods security;
v. Improved water availability even during the dry season.

5.3.2 Negative Social Economic and Environmental Impacts

5.3.2.1 Social Impacts and Mitigation Measures

Social conflicts between water users may be the key negative impacts experienced at the pan as more water is now be available and may attract more interested parties like livestock keepers and wild animals.

These negative social economic impacts can be mitigated against through;

- Awareness creation on the importance of proposed Kesi water pan rehabilitation should be enhanced properly by facilitators.
- Awareness creation and training on conflict management and resolution
- Providing a watering schedule including wise use of the water resources.
- Fencing of the water pan
- Fees introduction for herders outside the area & fees introduced for local users to be used on maintenance
- Use of already formed water management committee.

5.3.2.2 Health and Safety of Workers and Local community

During excavation and subsequent operation, the community is exposed to a number of health, safety and welfare concerns. These include slipping and accidental falls, working under height, dust, injury from equipment, tools and unavailability of portable water. Excavated materials may also congest the site. Accidents from slippery, steep and unstable ground could compromise ~~workers~~workers' safety. The workers will also need toilet facilities. Further, observation of **covid-19** regulation as stipulated in the public health act legal notice 54 of April 2020 are of paramount importance.

Mitigation measures

- *Supply workers with potable water during construction phase.*
- *Toilets should be accessible.*
- *Provide cleaning water and soap*
- *Provide certified hand sanitizers*
- *Ensure anybody entering the site has a face mask and washes hands/sanitize*
- *Use of thermo-guns to check body temperature and those with above normal referred for further medical attention*
- *Wet probable dust generation sites and provide gas masks*
- *Provide hand wash and sanitizers at entry points*
- *Provide face mask to all the workers on site*

5.3.2.3 Loss of Biodiversity

Due to increased human activities during operation and rehabilitation, biodiversity may be affected. Excavated soils may cover vegetation leading to loss of habitats. Also, the site where the reservoir is to be extended has some trees which may give in to the reservoir

Mitigation measures

- *Only critically affected vegetation by the projects should be removed and reestablished later*
- *Fence off and replant trees and grass around the water pan.*
- *Protect sensitive vegetation from soils excavated*

5.3.2.4 Loss of Grazing Grounds

The loss of grazing area will be minimal as the water pan is small, loss may occur as a result of over grazing and poor management of the rangelands

Mitigation

- *Discuss with the local communities about rotational sites for grazing and advise them on ways and means to develop such alternatives*
- *Sensitize the community on the need to destock where necessary*

5.3.2.5 Occupational Health and Safety Issues

The following occupation health and safety impacts have been identified during operations and maintenance:

(i) Accidents such as drowning during the operational stage

Mitigation Measures:

- *Awareness creation on the importance of pan safety;*
- *Provision of designated points for livestock watering*
- *Fencing of the water plan*

(ii) Consumption of contaminated water may result in poor health, incapacitation or death;

Mitigation Measures

- *Periodically sample water, test, treat (where possible) and release; and*
- *Provide alternative treated water fit for consumption and discourage the use of untreated water from the reservoir for domestic uses*

(iii) Extensive breeding of vectors in the impounded water may cause vector borne diseases within the community surrounding the reservoir. Some of the most common vector borne diseases includes bilharzias, malaria, typhoid and dysentery.

Mitigation Measures

- *Promote primary health care practices, -water boiling to use on drinking, use of mosquito nets, and regular hand washing;*

5.3.2.6 Personal Health and Safety

Health issues are a major concern globally; therefore, hazards associated with diseases must be dealt with. Safety may be compromised when children play around the reservoir. The operation of the facility is likely to result in the following.

- *Increased movement of human leading to congestion on the available paths and walk-ways which will cause soil erosion in the long run.*
- *Accidental falls into the pan.*
- *Consumption of water before treatment*
- *Breeding of mosquito from the stagnant water.*

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Mitigation measures

- *Construct the facilities as per the recommended plans that include fencing, toilets and water pumping site access steps to the reservoir and paths among others.*
- *Develop By-laws that are acceptable to all and sensitize the users on the same.*
- *Train the group members on water use efficiency with conservation aspects being integrated.*
- *Restrict livestock and human movement inside the reservoir by fencing the site.*

5.3.2.7 Health Impact – Spread of COVID-19 amongst construction workers

The World Health Organization declared COVID-19 a global pandemic after assessing both its alarming levels of spread and severity, and the alarming levels of inaction. Consequentially, WHO issued various guidance and measures to prevent the spread of the virus. The measures have been adopted worldwide. Similarly, the Kenyan government has since then issued several guidance and directives after the first case was registered on March 13th 2020. These included complete cessation of movement to and from areas considered hot spots and night curfew, social distancing guidelines, closure on non – critical and essential enterprises, closure of places of worship and public gatherings, mandatory use of masks in public places, among others.

During project execution (civil works), large numbers of workers will be required to assemble together in meetings, toolbox talks and even at work sites; varied number of workforce including suppliers of material and services are also expected to come in from various places in the country which may be COVID-19 hot spots; and interaction of workers with the project host community will happen as workers find accommodation close to work sites, and/or return to their homes after works. The potential for the spread of any infectious disease like COVID-19 by projects is high. There is also the risk that the project may experience large numbers of its workforce becoming ill and will need to consider how they will receive treatment, and whether this will impact on local healthcare services including the project host community. The presence of international workers, especially if they come from countries with high infection rates, may also cause social tension between the foreign workers and the local populations.

Recently, the WHO has warned that the virus is here to stay for a long time and might persist and become our new way. The Government of Kenya has also lifted some of the initial movement controls and allowed the resumption of business, with certain industry specific guidelines being enforced. The duty of care has now been transferred to individual citizens and enterprises. Recognizing the potent risk this may present, it is difficult to clearly outline exhaustive mitigation measures under the mitigation impacts. As such, there is need for the client and the contractor to develop and adopt COVID-19 Standard Operating Procedure (SOPs) in line with the World Bank guidance, Ministry of Health Directives and site-specific project conditions. These SOPs need to be communicated to all workers and enforced to the latter without fail. In addition to the requirement of the SOPs, the following mitigation measure shall also be adopted:

Mitigation Measures Against Spread of COVID-19 Amongst Workers:

The Contractors will develop SOPs for managing the spread of Covid-19 during project execution and submit them for the approval of the Supervision Engineer and the Client before mobilizing to site. The

SOPs shall be in line with the World Bank guidance on COVID-19, Ministry of Health Directives and site-specific project conditions;

- *Mandatory provision and use of appropriate Personal Protective Equipment (PPE) shall be required for all project personnel including workers and visitors;*
- *Avoid concentration of more than 15 workers at one location. Where there are two or more people gathered, maintain social distancing of at least 2 meters;*
- *All workers and visitors accessing worksites every day or attending meetings shall be subjected to rapid Covid-19 screening which may include temperature check and other vital signs;*
- *The project shall put in place means to support rapid testing of suspected workers for covid-19;*
- *Install hand washing facilities with adequate running water and soap, or sanitizing facilities at entrance to work sites including consultation venues and meetings and ensure they are used.*

5.4 Social Risk

5.4.1 Spread of COVID-19 Amongst Community Members During Consultations

During implementation of the ESMP and RAP, various consultative activities will be undertaken. For efficient and meaningful engagement, a wide range of individual participants, groups in the local community and other stakeholders will be involved. The types of consultations to be used to pass information shall be through public Baraza's, electronic means shall be used where possible and one-on-one basis meetings while observing the COVID-19 mitigation measures to ensure safety stakeholders involved, the community at large and the client. The consultations will involve verification of PAPs covering the occupants of the affected area and vulnerable persons and groups; awareness raising, sensitization of PAPs and gauging attitude to the project; training and capacity building for livelihoods restoration, grievance redress, execution of site - specific surveys among others. If carried out conventionally, these activities would lead to close interaction between the proponent and the community members leading to a high risk of spreading COVID-19 amongst community members during the consultation process.

To minimize the risk of spread of COVID-19 amongst community members, alternative means of consultation will be required as mitigation measures to ensure social distancing and appropriate communication measures. The mitigation measures will be supervised by a communications/ stakeholder engagement / social safeguards expert in the project proponent's team.

Mitigation measures against spread of COVID-19 amongst community members

- *Electronic means of consulting stakeholders and holding meetings shall be encouraged whenever feasible. One-on-one engagements for the PAPs while observing social distance and adhering to PPE wearing shall be enforced;*
- *Avoid concentrating of more than 15 community members at one location. Where two or more people are gathered, maintain social distancing of at least 2 meters;*
- *The team carrying out engagements within the communities on one-on-one basis will be provided with appropriate PPE for the number of people they intend to meet;*

- *Use traditional channels of communications when stakeholders do not have access to online channels or do not use them frequently. Allow participants to provide feedback and suggestions.*
- *Hold meetings in small groups, mainly in form of FGDs if permitted depending on restrictions in place and subject to strict observance of physical distancing and limited duration*.

In situations where online interaction is challenging, disseminate information through digital platform (where available) like WhatsApp & Chart groups.
Ensure online registration of participants, distribution of consultation materials and share feedback electronically with participants.

5.4.2 Water Demand Conflicts

During the dry seasons water volume reduces and members may seek more water for livestock purposes which could lead to conflicts among users of the water pan. Also, livestock keepers may want to water their cattle here

Mitigation measures

- *Schedule will be set for reduced water use during the dry season*
- *By laws should be followed and enforced.*
- *Penalties and fines will be introduced.*
- *Sensitize the users on outlined water use schedules*

5.4.3 Water quality nitrate pollution by livestock dung, pesticides and fertilizers

Livestock if they access the water from the reservoir may deposit dung and lead to nitrate pollution.

Also, Vegetable growing may require increased use of pesticides and chemical .f Workers may also wash in the pan water and children may start swimming in the pan. Use of inorganic fertilizers may also contaminate the water. All these affect the water quality and compromise health of water users. Livestock may also contaminate the water or objects may be thrown into the pond

Mitigation measures

- *Livestock should not be allowed to drink water directly from the reservoir at any time.*
- *By laws should take care of water quality issues associated with livestock and children*
- *Train on safe use of pesticides and disposal of washings and waste containers*
- *Kesi management committee will form group that will be guarding the pan on shift basis.*

5.4.4 Project Sustainability

For effective sustainability of the project, record keeping should be done throughout the project lifecycle for the purpose of monitoring and evaluations. The management committee may fail to run the facilities that may lead to the projects closure. The community may deem necessary to utilize the land nearby either by introducing invasive or destructive plants like foreign prosodies and eucalyptus trees that are environmentally unfriendly.

Mitigation measures

- *Before any new plants are introduced necessary government, departments must be consulted for recommendations*
- *The records that must always be kept include agreements on land use and all other documents relating to the site ownership transfers. This is for reference and administrative purpose in future.*
- *The by-laws should be enforced throughout the project lifecycle.*
- *All disputes will be solved internally where they are not criminal in nature and more serious ones referred to the police or the local Chief.*
- *Plant wind breaks around the pan in form of Neem trees in rows around the perimeter fence*
- *Training the management committee on financial management, developing by laws etc.*
- *Ensuring that there is continued financial contribution by the water pan users to generate revenues for operations and maintenance*

5.4.5 Siltation

This may be caused by soil eroded from the catchment area that is usually bare during dry season. The runoff may transport the dung from the catchment that may include prosopis seeds into the reservoir that may lead to growth of invasive prosodies in the reservoir. Poor workmanship or failure to maintain the siltation ponds may lead to excessive siltation closure of the project.

Mitigation measures

A silt trap will be constructed to check the amount of soil that is transported into the pan hence increase the life span of the structure. This will involve clearing of vegetation over a surface area of and excavating a depth of 2m. This will create a volume of spoils that would require to be disposed off appropriately. The silt volume expected per year is 1,400m3 and hence adopt a standard silt trap of capacity 20m by 30m by 2m depth.

- *Soil conservation should be addressed seriously and silt trapping facilities maintained.*
- *By-laws to ensure operation and maintenance.*
- *Training project group members on maintenance of the facility.*
- *Use of the recommended materials and skilled labor for technical work.*
- *Gabion installation along the waterways and spillways.*

5.4.6 Gender Based violence and Sexual Harassment

This impact is triggered during Project Construction Phase when the Contractor fails to comply with the following provisions;

Gender Inclusivity requirements in hiring of workers and entire Project Management as required by Gender Policy 2011 and 2/3 gender rule.

Mitigation Measures of Human Rights and Gender Requirements

i. *Ensure clear human resources policy against sexual harassment that is aligned with national law*
ii. *Integrate provisions related to sexual harassment in the employee COC*
iii. *Ensure appointed human resources personnel to manage reports of sexual harassment according to policy*
iv. *The Contractor shall require his employees, sub-contractors, sub-consultants, and any personnel thereof engaged in construction works to individually sign and comply with a Code of Conduct with specific provisions on protection from sexual exploitation and abuse*

5.4.7 Sexual Exploitation and Abuse (SEA)

This impact refers to sexual exploitation and abuse committed by Project staff against communities and represents a risk at all stages of the Project, especially when employees and community members are not clear about prohibitions against SEA in the Project.

Mitigation Measures to Risk of SEA

- *Develop and implement a SEA action plan with an Accountability and Response Framework as part of the C-ESMP. The SEA action plan will follow guidance on the World Bank's Good*
- *Practice Note for Addressing Gender-based Violence in Investment Project Financing involving Major Civil Works (Sept 2018).*

The SEA action plan will include how the project will ensure necessary steps are in place for:

i. *Prevention of SEA: including COCs and ongoing sensitization of staff on responsibilities related to the COC and consequences of non-compliance; project-level IEC materials;*
ii. *Response to SEA: including survivor-centered coordinated multi-sectoral referral and assistance to complainants according to standard operating procedures; staff reporting mechanisms;*
iii. *Written procedures related to case oversight, investigation and disciplinary procedures at the project level, including confidential data management;*
iv. *Engagement with the community: including development of confidential community-based complaints mechanisms discrete from the standard GRM; mainstreaming of PSEA awareness-raising in all community engagement activities; community-level IEC materials; regular community outreach to women and girls about social risks and their PSEA-related rights;*
v. *Management and Coordination: including integration of SEA in job descriptions, employments contracts, performance appraisal systems, etc.; development of contract policies related to SEA, including whistle blower protection and investigation and disciplinary procedures; training for all project management; management of coordination mechanism for case oversight, investigations and disciplinary procedures; supervision of dedicated PSEA focal points in the project and trained community liaison officers.*

5.4.16 Gender-based Violence (GBV) at the community level

This impact refers to gender-based violence that women and girls may experience as a result of Project implementation. This also refers to other GBV-related risks incurred as a result of water and sanitation projects that do not adequately consult women and adolescent girls in the community about safety and security issues related to the delivery of water and sanitation services.

Mitigation Measures to Risk of GBV at the community level

i. *Develop and implement provisions that ensure that gender-based violence at the community level is not triggered by the Project, including:*
ii. *Effective and on-going community engagement and consultation, particularly with women and girls;*
iii. *Review of specific project components that are known to heighten GBV risk at the community level, e.g. compensation schemes; employment schemes for women; delivery of water supplies; etc.*
iv. *Specific plan for mitigating these known risks, e.g. sensitization around gender-equitable approaches to compensation and employment; water services; etc*
v. *Ensure adequate referral mechanisms are in place if a case of GBV at the community level is reported related to project implementation.*

CHAPTER SIX

6.0 ENVIRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING PLAN (ESM&MP)

6.1 Introduction

Along with the potential impacts presented in this chapter, proposed mitigation measures have also been highlighted in the ESM&MP for appropriate action. Some impact mitigation has already been proactively addressed in the design, and in the legal and regulatory framework, while others would be undertaken through considered incorporation in the implementation of the project and guided by the environmental & social management plan (ESM&MP) developed under this report. The ESM&MP provides a general outlay of the activities, associated impacts, mitigation action plans and appropriate monitor-able indicators. Implementation timeframes and responsibilities are also defined.

The responsibility for the integration of the mitigation measures for the proposed development lies with the Contractor during the construction stage- ESM&MP will form part of the contractor's agreement while the Proponent takes over the duty upon commissioning of the project. At every stage, the objective will be to ensure that the specified mitigation measures are implemented.

6.2 Environmental Social Management & Monitoring Plan

The scope of this environmental & social management plan (ESM&MP) document is to give guidelines to all parties involved in construction, maintenance and utilization of the water pan in fulfillment of environmental and social requirements. The management plan has a long-term objective to ensure that:

i. Environmental management conditions and requirements are implemented from the start of the project and post construction period, and
ii. Precautions against damage to environment and property and claims arising from damages are compensated expeditiously.

The tables below therefore summarize the Environmental & Social Management Plans for this project. They describe the parameters that can be monitored, and suggests how monitoring should be done, how frequently, and who should be responsible for monitoring and action.

6.3 CONSTRUCTION PHASE

6.3.1 Environmental Management & Monitoring Plan

	Potential Impact Description	**Mitigation/ Enhancement Measures**	**Approximate Mitigation Cost (Kshs)**	**Responsibility**	**Time frame**	**Monitoring Indicators**
1.	Noise pollution and increase dust levels during excavation activities	• Conduct regulagr servicing of machinery and vehicles • Limit use of heavy machinery and equipment to daytime • Provide workers with ear plugs and muffs	20,000.00	Contractor	Indicate timeframe	No of personal protective equipment
2.	Loss of trees, bushes and grassland in the impoundment area to excavation and clearing	• Clear only where necessary • Allowing natural vegetation regeneration	50,000.00	Kesi Community, Contractor	During Construction of the project	Percentage of the cleared land rehabilitated
3.	Substandard construction of the facility	• Ensure a monitoring system and supervisory task are instituted to ensure the construction team adheres to the design specifications • Engineering design to be followed strictly.	500,000.00	Proponent Inspection team Kesi Community group Project site engineer	During Construction of the project	Number of supervisions conducted
4.	Solid waste disposal	• Dispose all spoils and soil mold appropriately	150,000	Contractor	During planning	Amount of soil recycled and

		• Recycle any useful material during water pan excavation phase • Provide waste skips/ bins to contain the wastes • Train workers and communities on proper waste management			and construction	disposed of
5.	Accidents/Incidences of drowning	• Fence off the pan after construction works are completed to ensure no risks on human, livestock and wildlife drowning • Sensitize the community members on the presence of the excavation works within the area and safety measures. • Hoarding of the site, use of PPE, and only authorized person to access the site. • Provide draw off facilities and watering points to prevent direct access to the pan. • Remove all objects that would obstruct visibility or pose site accident.	1,500,000	Contractor Kesi Community Water Committee, Community Members KCSAP	During planning and construction	Length of fence constructed Number of community sensitizations on excavation works No of draw off facilities
6.	Interference with the physical environment	• Dispose all spoils and soil mould appropriately • Landscape and restore all disturbed areas • Plant natural trees around the cleared section of the pan	350,000	Contractor Kesi Community group and	During planning and construction	Area landscaped and no. of seedlings planted

				KFS		
7.	Site Related Oil Spills	The Contractor should ensure that the employees on site are aware of the company procedures for dealing with spills and leaks from oil storage tanks e.g. using dispersants or adding biological agents to speed up the oil breakdown for the construction machinery though induction and safety training (the contractor will propose a method of clean-up which will be subject to approval); even though, no significant use of machinery is expected. In case of spillage the Contractor should isolate the source of oil spill and contain the spillage to the source of leakage before it makes its way into the rivers, using sandbags, sawdust, absorbent material, and/or other materials approved by the Resident Engineer; The Resident Engineer and the Contractor should ensure that there is always a supply of absorbent material such as saw dust on site during construction, readily available to absorb/breakdown spill from machinery or oil storage, this can be incinerated after use;	50,000	Contractor Supervising Engineer	During construction	Safety trainings conducted Oil containment store and designated machinery maintenance and repair section

		All vehicles and equipment should be kept in good working order, serviced regularly in accordance to the manufacturers specifications and stored in an area approved by the Resident Engineer; The Contractor should assemble and clearly list the relevant emergency telephone contact numbers for staff, and brief staff on the required procedures				
9.	Miscellaneous Environmental issues	As prescribed by the Environmental Supervisor	80,000	Environmental Supervisor	During construction	Issues identified

6.3.2 Social Management & Monitoring Plan

	Potential Impact Description	**Mitigation/ Enhancement Measures**	**Approximate Mitigation Cost (Ksh)**	**Responsibility**	**Time frame**	**Monitoring Indicators**
1.	Child Labour and Protection	Ensure no children are employed on site in accordance with the law Ensure that any child sexual relations offenses among contractors' workers are promptly reported to the police	200,000	Contractor Supervising Engineer Local Administration	During Construction of the project	No. of cases reported

2.	HIV & AIDS Impacts	• Sensitize workers and the surrounding communities on awareness, prevention and management of HIV/AIDS through staff training, awareness campaigns, multimedia and workshops or during community Barazas. Provide information, education and communication. • Use of existing clinics to provide VCT services to construction crew and provision of ARVs for vulnerable community members. • Provide Condom dispensers at appropriate locations	200,000	Contractor Supervising Engineer Tana River County Government KCSAP	During construction of the project	Awareness campaigns done Condom dispensers in place
3.	Substandard construction of the facility	• Ensure a monitoring system and supervisory task are instituted to ensure the construction team adheres to the design specifications • Engineering design to be followed strictly.	500,000.00	Proponent Inspection team Kesi Community group Project site engineer	During Construction of the project	Number of supervisions conducted
4.	Accidents/ Incidences of drowning	• Fence off the pan after construction works are completed to ensure no risks on human, livestock and wildlife drowning	1,500,000	Contractor Kesi Community Water	During planning and construction	Length of fence constructed

		• Sensitize the community members on the presence of the excavation works within the area and safety measures. • Hoarding of the site, use of PPE, and only authorized person to access the site. • Provide draw off facilities and watering points to prevent direct access to the pan. • Remove all objects that would obstruct visibility or pose site accident.		Committee, Community Members KCSAP		Number of community sensitizations on excavation works No of draw off facilities
5.	Occupational health and safety of workers	Provide workers with appropriate personal protective clothing: helmets, boots and overalls. • Provide a well-stocked first aid kits on the site • Sensitize workers on safety measures required during water pan excavation and maintenance phase • Construct the facilities as per the recommended plans and designs that include fencing, toilets and water pumping site access steps to the reservoir and paths among others.	500,000	Contractor, Community group and public health	During planning and construction	Fenced area -Safety kits provided -no of trainings conducted -no of toilets constructed -Number of barazas conducted Proportion of worker wearing face mask -No of hand washing sites

		• Develop By-laws that are acceptable to all. • Train the group members on water use efficiency with conservation aspects being integrated. • Restrict livestock and human movement inside the reservoir by fencing the site. • adhere to public health rule on covid-19 (social distancing, hand washing, waring of face masks)				Number of thermo-grans and face masks procured.
6.	**COVID 19-** Spread of Covid19 among the workers	The Contractors will develop a Standard Operating Procedures (SOPs) for managing the spread of Covid-19 during project execution and submit them for the approval of the Supervision Engineer and the Proponent before mobilization. The Standard Operating Procedures (SOPs) shall be in line with the World Bank guidance on COVID-19, Ministry of Health directives and site-specific project conditions;	100,000	Supervising Engineer & Contractor	During construction	Availability of Standard Operating Procedures (SOPs), Training material, PPE, sanitising facilities among others.

		Mandatory provision and use of appropriate Personal Protective Equipment (PPE) shall be required for all project personnel. Avoid concentrating of more than 15 workers at one location. Where there are two or more people gathered, maintain social distancing at least 2 meters. All workers and visitors accessing worksites every day or attending meetings shall be subjected to rapid Covid-19 screening which may include temperature check and other vital signs; The project shall put in place means to support rapid testing of suspected workers for covid-19 •Install hand washing facilities with adequate running water and soap, or sanitizing facilities at entrance to work sites including consultation venues and meetings and ensure they are used;				

		•Ensure routine sanitization of shared social facilities and other communal places routinely including wiping of workstations, door knobs, hand rails etc				
7.	Spread of COVID-19 among community members during consultations	Avoid concentrating of more than 15 community members at one location. Where there are two or more people gathered, maintain social distancing at least 2 meters The team carrying out engagements within the communities on one-on-one basis will be provided with appropriate PPE for the number of people they intend to meet Hold meetings in small groups, mainly in form of FGDs if permitted depending on restrictions in place and subject to strict observance of physical distancing and limited duration. One-on-one	50,000	All the Project components Supervising Engineer & Contractor Experts engaged in the team.	During and after construction.	

		engagements for the PAPs while observing social distance and adhering to PPE wearing shall be enforced; Electronic means of consulting stakeholders and, holding meetings, whenever possible, shall be encouraged whenever feasible.				
8.	Gender-based violence at the community level	The contractor will implement provisions that ensure that gender-based violence at the community level is not triggered by the Project, including: Effective and on-going Community engagement and consultation, particularly with women and girls; Review of specific project components that are known to heighten GBV risk at the community level; • Specific plan for mitigating these known risks, e.g. sensitization around gender-equitable approaches to employment	100,000	Gender Based Violence (GBV) expert	During Construction of the project	Number of GBV cases at the community level that needed attention and care

		• The contractor will ensure adequate referrals mechanisms are in place if a case of GBV at the community level is reported related to project implementation				
9.	Sexual Exploitation and Abuse (SEA) by project workers against community members	• Develop and implement a SEA action plan with an accountability and response framework as part of the Contractor specific-ESMP. • The SEA action plan will include how the project will ensure necessary steps are in place for: Prevention of SEA: including sensitization of staff on responsibilities and consequences of non-compliance; Engagement with the community: including development of confidential community-based complaints mechanisms discrete from the standard GRM; Participatory SEA awareness-raising in all community engagement activities.	50,000	Gender Based Violence expert	during construction	SEA Action Plan Code of Conduct Number of staff Trainings Relevant policies, e.g. investigations and discipline and whistle blower protection Minutes from SEA coordination meetings

10.	Crime Management	Fencing around project area. Working with local committees to provide security within the site in addition to the Contractor's own security. Removing any employee who persists in any misconduct or lack of care, carries out duties incompetently or negligently, fails to conform to any provisions of the contract, or persists in any conduct which is prejudicial to safety, health, or the protection of the environment. Taking all reasonable precautions to prevent unlawful, riotous or disorderly conduct by or amongst the contractor's personnel, and to preserve peace and protection of persons and property on and near the site. Prohibiting alcohol, drugs, arms, and ammunition on the worksite among personnel. The contractor and Supervision Consultant should register in a log all events of a criminal nature that occur at the	Included in contractor's cost	Contractor Supervising Engineer	during construction	Cases reported

		worksite or are associated with the civil works activities. The contractor and Supervision Consultant should report all activities of a criminal nature on the worksite or by the contractor's employees (whether on or off the worksite) to the police and undertake the necessary follow-up. Crime reports should include nature of the offense, location, date, time, and all other pertinent details.				

6.4 OPERATION PHASE

6.4.1 Environmental Management & Monitoring Plan

	Potential Impact Description	**Mitigation/ Enhancement Measures**	**Approximate Mitigation Cost (Ksh)**	**Responsibility**	**Time frame**	**Monitoring Indicators**
1.	Possible breeding of disease-causing vector due to the presence of the pan	• Conduct health training measure for the community members • Awareness creation; mosquito nets; Boiling and treatment of drinking water if collected when polluted;	100,000.00	Community group, Public Health and Water Officers.	4 months after commissioning and periodically thereafter	No of persons treated for water borne diseases

	Increase in water-borne and other related diseases	regular supervision of the pan in order to identify any malfunctioning early enough • Monitor reported illnesses and improve health services and proximal to the site. • Regular spraying of homes and houses within the water pan project area to rid them of mosquitoes; • Improving the immediate hospital capacity to handle probable increase in incidences of malaria; • Supply of mosquito nets at a subsidized cost;		County government department of health		
2.	Degradation of vegetation and soil loss around the pan due to increased visits by the community livestock and wildlife	• Restrict water use to very dry periods when all the other water sources available are dry to allow for regeneration. • Provide other watering points distributed evenly to reduce over- concentration • Planting of grass around the pan	1,500,000	Community Management Group KCSAP proponent	One month After completion of pan.	Area reseeded by grass
3.	Sedimentation/Siltation of the pan and loss of storage	• Construct a silt trap on the upper side of the pan • De-silt the silt trap on regular basis • Pan de-silting	2,000,000 for silt trap and pan de-silting 50,000 for	Community group	After every heavy down pour	Amount of silt de-silted per year No of silt trap

		• Construct adequate draw off facilities to ensure no direct access by wildlife and livestock • By-laws to ensure operation and maintenance. • Training project members on maintenance of the facility. • Use of the recommended materials and skilled labor for technical work.	committee members training		Every five years Follow up trainings on quarterly basis	constructed
4.	Possible water pollution	• Provide draw off facilities to deter direct access to the facility • Control land use in the watershed of the pan including settlements	1,200,000	Contractor, Community group	During construction	Area conserved within the catchment
5.	Diversion of surface Runoff	• Spillway to direct discharge back to the natural course	400,000	Contractor	During construction	Length and no of diversion
6.	Loss of Biodiversity (Flora and Fauna)	• Loss of Habitat should be checked by maintaining the buffer zone; the areas should be re-vegetated with local area vegetation •The walk ways should be designated. •Soil conservation techniques should be addressed mostly on	100,000	Community water pan management group and the contractor as well as forestry department	Continuous	Area re-vegetated No. of trees Planted Length of spillway constructed

		critical areas e.g. building check dams. •Adaptable tree species should be introduced on mostly on water ways and other affected areas by human activities. These trees include Neem and local acacias and other recommended species. •Spill way should be located on appropriate location so as to reduce chances of floods downwards during heavy down pour				
7.	Soil degradation	Soil erosion, pollution, compaction and contamination should be controlled by having interval of grass strips or land cover vegetation on the pan embankment; stock piled soils should be covered and protected from erosion; re-vegetate areas cleared of erosion; scrub compacted areas. Stabilize the excavated and heaped soils Replant trees and grasses around the reservoir.	3,500,000	Community water pan management group and livestock department as well as environmental office	Annually	Length of protected embankment Area planted into grass around the pan Length of water-way conserved

		Landscape water ways to avoid siltation. Protect the dams by fencing off. Serious soil conservation measures on water ways and catchment area should be carried out.				
8.	Water quality pollution by livestock dung, pesticides and fertilizers	•Livestock should not be allowed to drink water directly from the reservoir at any time. •By laws should take care of water quality issues associated with livestock and children Sample testing of water quality should be done every 3 months		Group members, Ministry of Health, Ministry of water	Continuous	No of testing on water quality
9.	Breaking of Water pan wall	• Monitoring and assessment of the water pan walls and project site particularly before the onset of the rains and as the rains progress. • Environmental Audit for the water pan annually as required by NEMA. • Train the project management committee (PMC) and the local administration on scouting which will lead to early detection and responding to	200,000	Contractor/ Supervising engineer Proponent Project Management Committee NEMA	One year after construction	• No of trainings for PMC • No of annual inspections conducted by engineers during construction and operational phases • Number of monitoring and assessment of the

		any risk situation/establish ER team • Develop Emergency Response Plan				water pan after the rains. • No of Environmental Audit for the water pan annually • Presence of Emergence Response Plan

6.4.2 Social Management & Monitoring Plan

	Potential Impact Description	**Mitigation/ Enhancement Measures**	**Approximate Mitigation Cost (Ksh)**	**Responsibility**	**Time frame**	**Monitoring Indicators**
1.	Vandalism of property	• Community sensitization; Community policing and Proponent support	70,000	Management	Annually	Security mechanism in place Number of cases of vandalism Number of community sensitizations on vandalism
2.	HIV/AIDS	HIV/AIDS awareness and reduction among the community members sharing the water point	To be determined with need and capacity	Group members, Ministry of Health	Monthly	Number of trainings on HIV/AIDS and the number of people trained

3.	Population Pressure and Water Demand Conflicts	Monitor the trend of migration during the project operation plan and adjust the required pan capacity by regular distillation. Increased pressure on the existing water sources in the project area. Schedule should be set for reduced water use during the dry season By laws should be followed and enforced. Penalties and fines should be introduced.	150,000	Group members,	Continuous	Number of disputes reported and resolved Grievance committee in place
4.	Project Sustainability	•The records that must always be kept include agreements on land use and all other documents relating to the site ownership. This is for reference and administrative purpose in future. •The by-laws should be enforced throughout the project lifecycle. •All disputes should be solved internally where they are not criminal in nature and more serious ones referred to the police or the local Chief.		Community Group members, Partners, Contractor	Continuous	Grievance committee in place Number of Bylaws developed Number of disputes reported and resolved

5.	Loss of Life, damage to property	Record of accidents and damages done	• Review of records • Interviews with staff and local community.	Environmental Supervisor	Monthly	Loss reported
6.	Drowning into the water pan	Fence off the site to keep of unauthorized entry especially children and animals	200,000	Proponent	Always	Fence in place

6.5 DECOMMISSIONING PHASE

6.5.1 Environmental Management & Monitoring Plan

	Potential Impact Description	**Mitigation/ Enhancement Measures**	**Approximate Mitigation Cost (Ksh)**	**Responsibility**	**Time frame**	**Monitoring Indicators**
1.	Land Leveling; Dust	•Workers to use Personal Protective Devices such as noise masks, breathing masks	20,000	Project Proponent	During demolishing work	Observation records
2.	Re-vegetation; Soil Erosion	•Take appropriate soil conservation measures	50,000	Project proponent	During demolishing work	Inspection report
3.	Safety Risks; Possible injuries from demolition activities.	• Training on safe working procedures. Ensure provision of PPEs at all stages of project cycle	300,000	Contractor	During demolishing work	Inspection report

4.	Noise pollution	• Good maintenance and proper operation of working machinery to minimize noise generation	150,000	Contractor	During demolition	Inspection report

6.5.2 Social Management & Monitoring Plan

	Potential Impact Description	**Mitigation/ Enhancement Measures**	**Approximate Mitigation Cost (Ksh)**	**Responsibility**	**Time frame**	**Monitoring Indicators**
1.	Safety Risks; Possible injuries from demolition activities.	• Training on safe working procedures. Ensure provision of PPEs at all stages of project cycle	300,000	Contractor	During demolishing work	Inspection report
2.	Wildlife and domestic animals management	Erect temporary fencing around the site in accordance with an approved site management plan	400,000	Proponent	During demolishing work	Fauna strike and mortality during operation. Inspection report
3.	Public Health & Safety	Sensitize workers and the surrounding communities on awareness, prevention and management of HIV/AIDS through staff training, awareness campaigns. Provide information, education and communication about safe uses of drinking water	100,000	Contractor	During demolishing work	Information provided and awareness

4.	Socioeconomic impacts	Ensure effective and matching contractual provisions/ obligations (Terms of the contract) for contractor to manage labour influx. The Contractor should enforce and maintain a code of conduct for his employees	Included in the contractor's cost	Contractor	During demolishing work	Impacts noted and terms of contract.

6.6 Institutional Arrangement for Monitoring Compliance with ESM&MP

The environmental and social issues included within the mitigation measures will be monitored and supervised by the project beneficiaries, chosen contractor, engineering team and the KCSAP County Environment and Social Safeguards Compliance Officer (CESSCO) and the Projects Monitoring and Evaluation Officer. The importance of monitoring is to ensure that the ESM&MP has been effectively implemented, furnish information on the progress and results of mitigation and provide early detection of conditions that necessitate mitigation measures.

Although the environmental and social impacts are expected to be moderate or low, the potential negative environmental and social impacts are planned to be prevented or mitigated during the construction and operation stages. Environmental and social monitoring system started from the preparation phase of the sub project and will continue through the operation phase in order to prevent negative impacts of the project and observe the effectiveness of mitigation measures.
The monitoring system will provide technical assistance and supervision when needed, early detection of conditions related to mitigation measures, follows up on mitigation results, and provides information of the project progress. The ESM&MP has provided information about the key environmental and social aspects of the sub project including the mitigation measures to be monitored.

The KCSAP Project Coordinating Unit in Tana River will comply with the provisions of any other environmental and safeguard requirement provided by legislation and conditions of the main funding agency (WB).

Audits and Reviews

Annual environmental, health and safety audits and reviews as required by NEMA will be conducted to assess the performance of the environmental, health and safety policies and operational procedures implemented.

Training

The selected contractor and workers that shall be engaged in the construction of the Kesi community water pan sub project will be provide with basic training to accomplish the objectives of the ESM&MP. Additionally, special training on GBV/SEA shall be provide to the key personnel who have key responsibilities under the ESM&MP.

Key Roles and Responsibilities in M & E
The Contractor

The Contractor will have the overall responsibility of adherence to the ESMP. He/she will work closely with the KCSAP CESSCO to identify necessary improvement to the implementation of the ESM&MP.

The Supervising Engineer

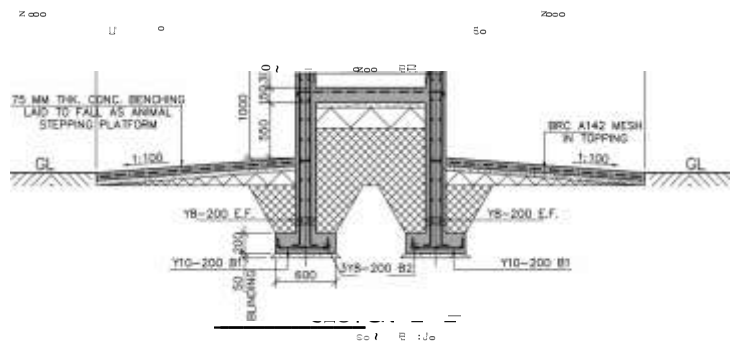
The works supervising engineer will ensure adherence to the mitigation measures identified in the ESMP within the respective areas. He/she will be responsible for the day to day execution of the mitigation measures described under this ESMP during the construction phase.
The supervising engineer will be required to produce monthly reports during the construction period of the water pan. This will include summary of activities and mitigation measures undertaken during the reporting period, any deviation of non-compliance to the ESMP, unexpected occurrence that could have occurred affecting the project implementation during the period, environmental monitoring records and any other issue of concern.

The CESSCO

This will have the responsibility to support the Contractor in meeting the planning requirements, training and the implementation of monitoring requirements.
The CPCU/CESSCO will also undertake the planning and coordinating with NPCU on GBV/SEA issues with subject specialist or consultant for meeting the measures proposed in the ESMP. The CESSCO is expected to carry out quarterly reporting of the sub project together with the M & E officer. These quarterly reports will form the basis for effective auditing and review of the ESMP of the proposed sub project.

Grievance Redress Mechanism

KCSAP incorporates complaint-handling and grievance redress mechanisms and social audits for greater transparency in sub project selection, implementation, and equitable sharing of benefits.
A Grievance Redress Mechanism (GRM) is a system by which queries or clarifications about a project are responded to, problems that arise out of implementation are resolved and grievances are addressed efficiently and effectively.
The County Grievance Committee and the Sub Project Social Accountability and Integrity Committee will always be open to the public for complaints/grievances, suggestions and advice on environmental related issues. These committees are important in ensuring effectiveness and compliance in the implementation of the ESMP.


75 MM THK. CONC. BENCHING
LAID TO FALL AS ANIMAL
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550
BRC A142 MESH
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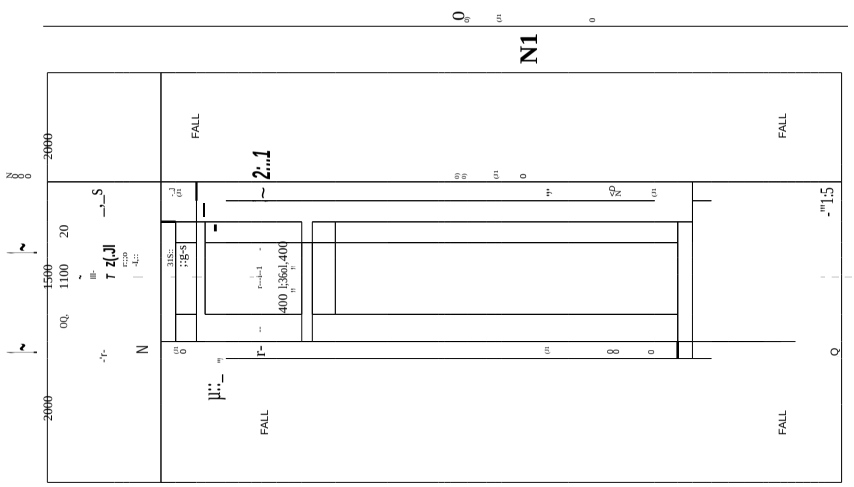
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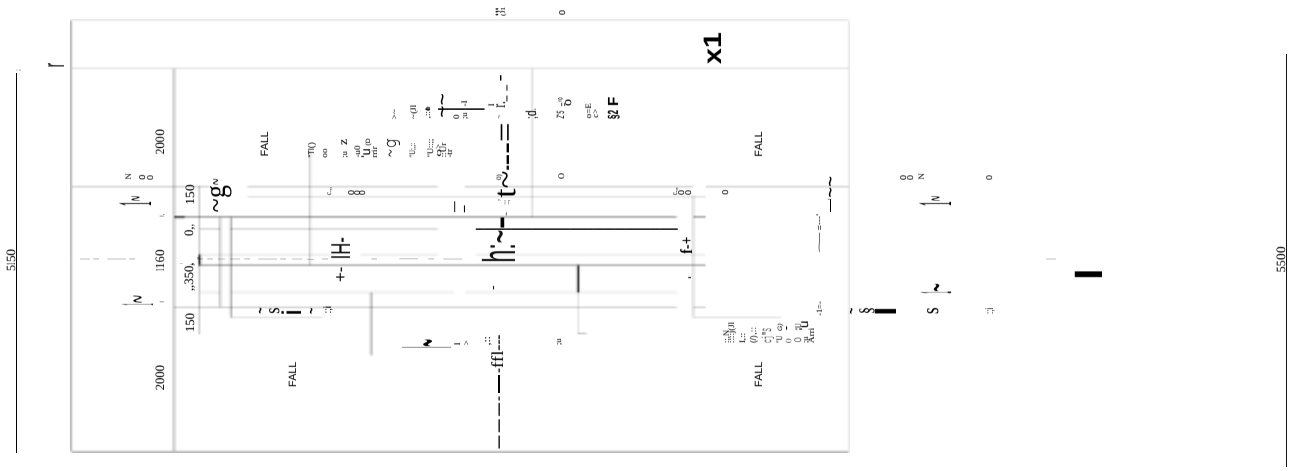
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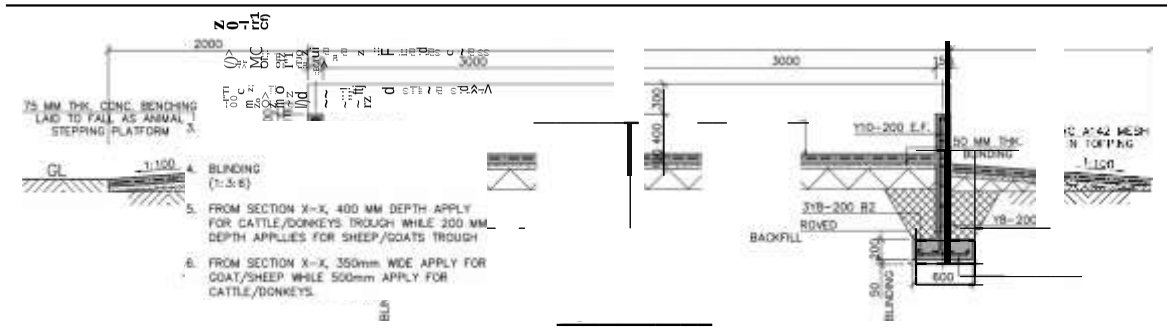
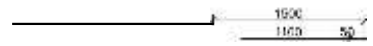
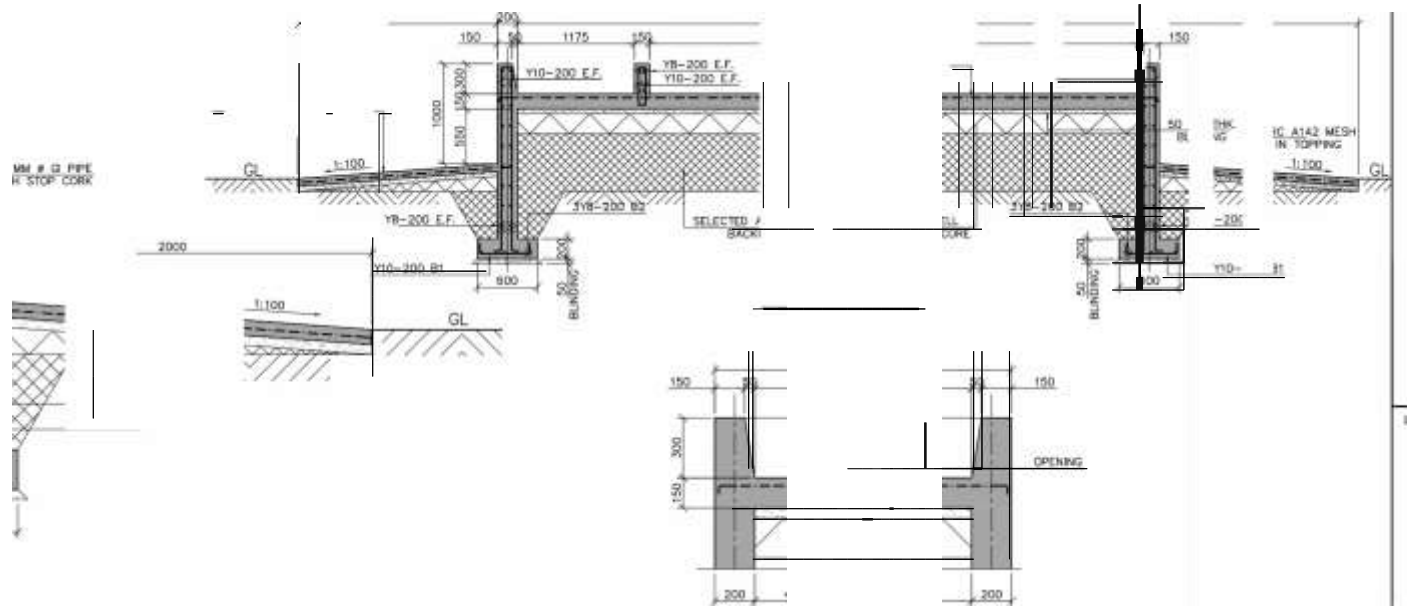
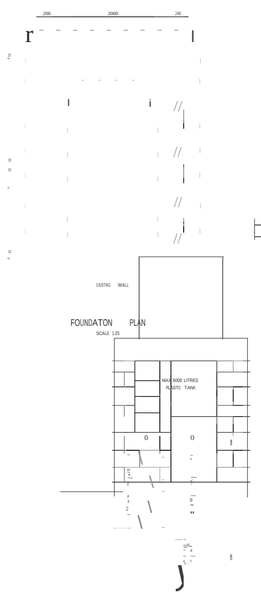






ANIMAL TROUGHS
CATTLE/SHEEP AND
CAMEL



FOUNDATON PLAN

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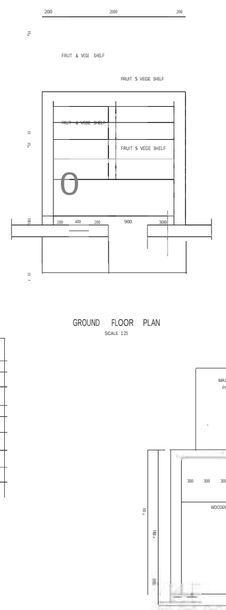

GROUND FLOOR PLAN

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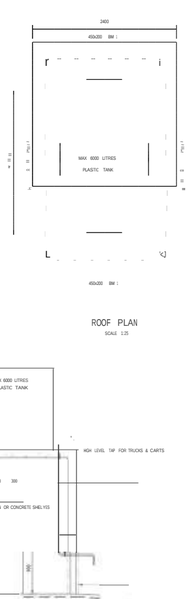

ROOF PLAN

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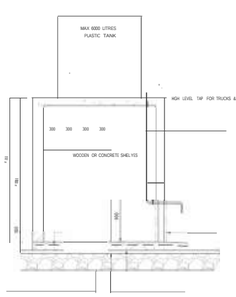


ALL DIMENSIONS AND LEVELS ARE TO BE VERIFIED BY THE CONTRACTOR BEFORE ANY WORK OR SHOP DRAWINGS ARE SCALED.

THE COPYRIGHT IN THIS DRAWING, INCLUDING THE DESIGN AND DETAILS SHOWN HEREON, IS RESERVED BY THE ARCHITECT.

THIS DRAWING IS NOT TO BE USED IN WHOLE OR PART EXCEPT THAT FOR THE INTENDED PURPOSE AND WHEN THE FULL PERMISSION OF THE ARCHITECT HAS BEEN OBTAINED.

READ TO THE CONTRACT FOR FULL TERMS AND CONDITIONS

SCALE

GENERAL NOTES:

1 ALL CONCRETE TO BE CLASS 25/20, MIX (1 :2 :3)

2 MINIMUM LAP LENGTH, TO BE 50 TIMES BAR DIAMETER

STEEL ROUND "R" K, INDICATED

3 REINFORCEMENT TO BE HIGH YIELD SQUARE TWISTED "Y" AND MILD

4 MINIMUM COVER TO REINFORCEMENT TO BE;

SUPERSTRUCTURE = 50mm
FLOOR BEAMS = 25mm
FLOOR SLAB = 20mm

5 ALL REINFORCEMENT TO BE INSPECTED BY THE ENGINEER BEFORE CONCRETING

6 MINIMUM BARS LAP LENGTH IS 50 x BAR DIAMETER

7 TLE STRUCTURAL DRAWING TO BE READ INCONJUCTION WITH THE ARCHITECT DRAWINGS

Client

KCSAP TANA RIVER COUNTY

Consultant Signature

Drawn OMAR Checked OMAR BUYA Designed

Project

OMAR

C LJ =:J   C LJ =:J

FRONT ELEV A TION

SCALE 1:25

300mm WELL COMPACTED
APPROVED HARDCORE FLL
(ON SOFT SOLS ONLY)

GSOO POLYTHENE SHEETS

50mm BLINDING CONCRETE

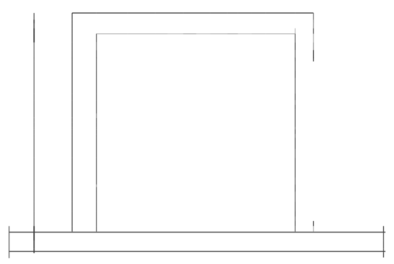
TYPICAL SECTON

SCALE 1:25

Description

LAYOUT & EV ELATON

Scale	1'25	Date	SEPTEMBER 2021
Pre ject No	/	Drg. No	L01



Annex 4 LAND CONSENT

TANA RIVER COUNTY GOVERNMENT
DEPARTMENT OF LANDS AND PHYSICAL PLANNING

Email: *landr@tanariver.go.ke*
Telephone: +254729874615
TANA-RIVER COUNTY

COUNTY CHIEF OFFICE LANDS
Box 29-70101,
HOLA

TRCG/CEC/AGR/2021/04
THE CHAIRPERSON

5th May 2021

KESI HAKOKA WATER PAN CBO

P. O. BOX 1-70100

HOLA

RE: CONSENT TO GRANT LAND FOR KENYA CLIMATE SMART AGRICULTURAL PROJECT MINI-PROJECT LAND –KESI

The above matter refers,

Reference is made to your request to be granted land for the KCSAP mini-projects for different sites in Tana River County.

Section .6 [1] of the Community Land Act 2016 provides the County Governments hold in trust unregistered community land on behalf of the Community. Community land may only be compulsorily acquired for public purpose and upon prompt payment of just compensation to the person or persons in full or negotiated settlement as provided for in section 5[4] of the Community Land Act. It is on this strength that the County Government consents to the establishment of the Irrigation Project will largely benefit the Community.

The County Government of Tana River consents to your request to construction an Earth Pan for Kesi Community located in Kesi within Chifiri Community Land as captured in the Community land agreement submitted to the Lands and Physical Planning Office.

The size of the land for the said Project is 6 acres (2.5 Ha) as captured in **Plan Ref No. TRCG/1629/2021/2**. Please find attached a copy of the plan for your record.

Yours Sincerely,

Hon Mwanajema Hiribae

CECM-Lands and Physical Planning

CC: **County Secretary**

Annex 5 CHECKLIST

Environmental and Social screening Check list

ESM Sub-projects Screening Checklist (Prototype)

(Sub-projects screening process by benefitting communities/Agencies)

Section A: Background information

Name of County: TANA RIVER

Name of CPCU /Researcher: GEORGE WASONGA

Sub-project location: ICESI VILLAGE, WAYU WARD, TANA RIVER SUB COUNTY

Name of CBO/Institution DEPARTMENT OF LIVESTOCK
Postal Address: 10-HOLA
Contact Person. NZIOKA WAMBUA Cell phone: 0722420037

Sub-project name. COMMUNITY BASED PASTURE SEED BULKING PROPOSAL

Estimated cost (KShs.) 30,685,000/-

Approximate size of land area available for the sub-project. 30 acres
Objectives of the sub project.
To increase availability of quality perrenial grass seed

Activities/enterprises undertaken
Water pan construction 50,000 cum

How was the sub-project chosen?
Through public participation

Expected sub project duration:
1 year

Section B: Environmental Issues

Will the sub-project:	Yes	No
Create a risk of increased soil erosion?		✓
Create a risk of increased deforestation?		✓
Create a risk of increasing any other soil degradation soil degradation?		✓
Affect soil salinity and alkalinity?		✓
Divert the water resource from its natural course/location?		✓
Cause pollution of aquatic ecosystems by sedimentation and agro-chemicals, oil spillage, effluents, etc.?		✓
Introduce exotic plants or animals?		✓
Involve drainage of wetlands or other permanently flooded areas?		✓

Cause poor water drainage and increase the risk of water-related diseases such as malaria?		✓
Reduce the quantity of water for the downstream users?		✓
Result in the lowering of groundwater level or depletion of groundwater?		✓
Create waste that could adversely affect local soils, vegetation, rivers and streams or groundwater?		✓
Reduce various types of livestock production?		✓
Affect any watershed?		✓
Focus on Biomass/Bio-fuel energy generation?		✓

If the answers to any of the above is 'yes', please include an EMP with sub-project application.

Section C: Socio-economic Issues

Will the sub-project:	Yes	No
Displace people from their current settlement?		✓
Interfere with the normal health and safety of the worker/employee?		✓
Reduce the employment opportunities for the surrounding communities?		✓
Reduce settlement (no further area allocated to settlements)?		✓
Reduce income for the local communities?		✓
Increase insecurity due to introduction of the project?		✓
Increase exposure of the community to HIV/AIDS?		✓
Induce conflict?		✓

Have machinery and/or equipment installed for value addition?	✓	
Introduce new practices and habits?	✓	
Lead to child delinquency (school drop-outs, child abuse, child labour, etc.?		✓
Lead to gender disparity?		✓
Lead to poor diets?		✓
Lead to social evils (drug abuse, excessive alcohol consumption, crime, etc.)?		✓

ection D: Natural Habitats

Will the sub-project:	YES	NO
Be located within or near environmentally sensitive areas (e.g. intact natural forests, nangroves, wetlands) or threatened species?		✓
Adversely affect environmentally sensitive areas or critical habitats – wetlands, woodlots, natural forests, rivers, etc.)?		✓
Affect the indigenous biodiversity (Flora and fauna)?		✓

Cause any loss or degradation of any natural habitats, either directly (through project works) or indirectly?		✓
Affect the aesthetic quality of the landscape?		✓
Reduce people's access to the pasture, water, public services or other resources that they depend on?		✓
Increase human-wildlife conflicts?		✓
Agrochemical use		
Will the sub-project:		
Involve the use of pesticides or other agricultural chemicals, or increase existing use?		✓
Cause contamination of watercourses by chemicals and pesticides?		✓
Cause contamination of soil by agrochemicals and pesticides?		✓
Experience effluent and/or emissions discharge?		✓
Export produce? Involve annual inspections of the producers and unannounced inspections?		✓
Require scheduled chemical applications?		✓
Require chemical application even to areas distant away from the focus?		✓
Require chemical application to be done by vulnerable group (pregnant mothers, chemically allergic persons, elderly, etc.)?		✓
Use irrigation system in its implementation?		✓

If the answers to any of the above is 'yes', please include an EMP with sub-project application.

Section E: Pesticides and Agricultural Chemicals

1) *Pest Control practices*

a) Do you use any pesticides to control pests (Insects, diseases, weeds) of crops each season?

Yes √No If yes, Name them:	Name of pesticide	Name of pest, disease, weed controlled	Number of times applied/ season	When did you apply (growth stage or month) Quantity purchased
NO				

If No, WHY? Pasture Induction, we don't Spray

b)If you use any of the above pesticide types, do you keep records of the:

(i)

(ii)

(iii)

(iv) .....

(v) .....

g) Do you use any kind of protective clothing while applying or handling pesticides?

Yes No Why?

h) If YES, what kind?

2. Knowledge of pesticide handling and storage (tick one in each row)

a) Do you read labels on the pesticide container before using

g) Do you use any kind of protective clothing while applying or handling pesticides?

Yes No Why?

h) If YES, what kind?

2. Knowledge of pesticide handling and storage (tick one in each row)

a) Do you read labels on the pesticide container before using

Sometimes Always Never

b) How often do you wear protective clothing and other accessories like nasal mask, eye goggles, and boots when applying the pesticides?

Application location: Yes..... No. Date
application:Yes..... No.. Pesticide product trade
name: Yes...No. Operator name: Yes..... No.
If No, WHY? Don't know how to write records

c) How do you decide when to use the pesticides (tick all that apply)?

(i) We use pesticides at regular intervals throughout the season(calendar)

(ii) We use pesticides when we see pests in the field(control)

(iii) We use pesticides after field sampling and finding a certain number of pests or a certain level of damage (scouting)

(iv) Told by someone to apply(specify who)

(v) Other(specify)

d) Do you use a knapsack sprayer? Yes. No

If yes,

(i) Do you own it Yes No

(ii) Do you rent it Yes No

(iii) Do you borrow it Yes No

e)From your experience, are there any negative/harmful effects of using pesticides?

Yes. No.....

f)If yes, list the negative effects:

Sometimes Always Never

b) How often do you wear protective clothing and other accessories like nasal mask, eye goggles, and boots when applying the pesticides?

Sometimes Always Never

c) Do you mix pesticides with your hands? Sometimes

Always Never

d) Do you observe the pre-harvest waiting periods after applying the pesticides? Sometimes

Always Never

e)After spraying, do you wait 12 hours before entering the field? Sometimes √

Always Never

f)Do you store pesticides in a secure, sound and well-ventilated location? Sometimes

Always Never

g) Do you make a cocktail before applying the pesticides? (i.e., mix more than one chemical and apply them at once?)

Sometimes Always Never

Sometimes Always Never

b) How often do you wear protective clothing and other accessories like nasal mask, eye goggles, and boots when applying the pesticides?

Sometimes Always Never

c) Do you mix pesticides with your hands? Sometimes

Always Never

d) Do you observe the pre-harvest waiting periods after applying the pesticides? Sometimes

Always Never

e)After spraying, do you wait 12 hours before entering the field? Sometimes √

Always Never

f)Do you store pesticides in a secure, sound and well-ventilated location? Sometimes

Always Never

g) Do you make a cocktail before applying the pesticides? (i.e., mix more than one chemical and apply them at once?)

Sometimes Always Never

h)Where do you storey our pesticides? In well ventilated store.Why do you store them there? Its secured and out of reach from children

i) What do you do with your pesticide containers after they are empty? Dispose them in pits

j)Do you know of any beneficial insects(insects that eat harmful insects)? Yes.
No.....

Integrated Pest Management Yes…No…

No. of times/past yr. …

b).Pesticide Usage Yes.. No……

No. of times/past yr. .3

c).Pesticide Safety Yes.. No……

No. of times/past yr. ……3

d).Insect Identification Yes… No……

No. of times/past yr. …3

e).Disease Identification Yes.. No……

No.of times/past yr. …3

f).Quality aspects of production Yes… No……

No. of times/past yr.……2

7)Is there anything else that you want us to know about your crop production?

N/A

Section F: Vulnerable and Marginalized Groups meeting requirements for OP 4.10

Are there:	Yes	NO
People who meet requirements for OP 4.10 living within the boundaries of, or near the project?		
Members of these VMGs in the area who could benefit from the project?		
VMGs livelihoods to be affected by the sub project?		✓

If the answer to any of the above is 'yes', please consult the VMGF that has been prepared for the project.

Section G: Land Acquisition and Access to Resources

Will the sub-project:	Yes	No
Require that land (public or private) be acquired (temporarily or permanently) for its development?		✓
Use land that is currently occupied or regularly used for productive purposes (e.g. gardening, farming, pasture, fishing locations, forests)		✓
Displace individuals, families or businesses?		✓
Result in temporary or permanent loss of crops, fruit trees and pasture land?		✓
Adversely affect small communal cultural property such as funeral and burial sites, or sacred groves?		✓
Result in involuntary restriction of access by people to legally designated parks		✓

Expert Advice

The National Government through the Department of Monuments and Sites of the National Museums of Kenya can assist in identifying and, mapping of monuments and archaeological sites; and Sub-project specific ESIAs, if recommended, must be carried out by experts registered with NEMA and be followed by monitoring and review. During the process of conducting an EIA the proponent shall seek views of persons who may be affected by the sub-project. The WB policy set out in OP 4.01 requires consultation of sub-project affected groups and disclosure of EIA's conclusions. In seeking views of the public after the approval of the sub-project, the proponent shall avail the draft ESIA report at a public place accessible to project-affected groups and local NGOs/CSOs.

Expert Advice

The National Government through the Department of Monuments and Sites of the National Museums of Kenya can assist in identifying and, mapping of monuments and archaeological sites; and Sub-project specific ESIAs, if recommended, must be carried out by experts registered with NEMA and be followed by monitoring and review. During the process of conducting an EIA the proponent shall seek views of persons who may be affected by the sub-project. The WB policy set out in OP 4.01 requires consultation of sub-project affected groups and disclosure of EIA's conclusions. In seeking views of the public after the approval of the sub-project, the proponent shall avail the draft ESIA report at a public place accessible to project-affected groups and local NGOs/CSOs.

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Section H: Proposed action

(i) Summarize the above:	(ii) Guidance
All the above answers are _No' There is at least one _Yes'	• If all the above answers are _No', there is no need for further action; • If there is at least one _Yes', please describe your recommended course of action (see below).

(iii) Recommended Course of Action

If there is at least one _Yes', which course of action do you recommend?

CPCUs and County Director of Environment (CDE) will provide detailed guidance on mitigation measures as outlined in the ESMF; and Specific advice is required from CDE and CPCUs regarding sub-project specific EIA(s) and also in the following area(s)

All sub-project applications/proposals MUST include a completed ESMF checklist. The KCSAP-CPCU and CDE will review the sub-project applications/proposals and the CDEs will sign off; The proposals will then be submitted to NPCU for clearance for implementation by communities in the proposed subprojects.

Date: [type here] 11 MAY 2021

Field Appraisal Officer (CDE): [type here] GEORGE WAJUNGA

Signature: / /

Date: [type here] 11/5/2021

Based on my personal Assessment and in accordance to EMCA of 1999 and legal Notice 31732, the Project falls under the Environmental Impact Assessment Summary Project Reports.

Annex 6. Expert license

nema

NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY(NEMA)

THE ENVIRONMENTAL MANAGEMENT AND CO-ORDINATION ACT

ENVIRONMENTAL IMPACT ASSESSMENT/AUDIT (EIA/EA) PRACTICING LICENSE

License No : NEMA/EIA/ERPL/14707

Application Reference No: NEMA/EIA/EL/19234

M/S **BONFACE MANYARA KOOME**
(individual or firm) of address

P.O. Box 06-60300 ISIOLO

is licensed to practice in the

capacity of a (Lead Expert/Associate Expert/Firm of Experts) **Lead Expert**
registration number **2534**

in accordance with the provision of the Environmental Management and Coordination Act Cap 387.

Issued Date: **4/9/2021**

Expiry Date: **12/31/2021**

Signature.....

(Seal)
Director General
The National Environment Management Authority

P.T.O.

ISO 9001: 2015 Certified

Annex 7. Photo gallery

1. Area ass. Chief addressing CPP

2. Lead expert addressing CPP

3.Proposed site is shown by community

4.Hakoka water pan (current water source)

5. Chifiri water pan next sub location

6. Nearest health facility

7. Hakoka primary school within the site